

CTO

THE MAGAZINE FOR INFORMATION EXECUTIVES

NOVEMBER 15, 1996

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BELGIUM BF240

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Is the Web **Ripe** for Electronic Commerce?

This Bunch is
Betting on it

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Fruit of the
Loom suits up
for channel
mastery

BEWARE
The
Integration
Backlash

PART ONE
PAGE 44

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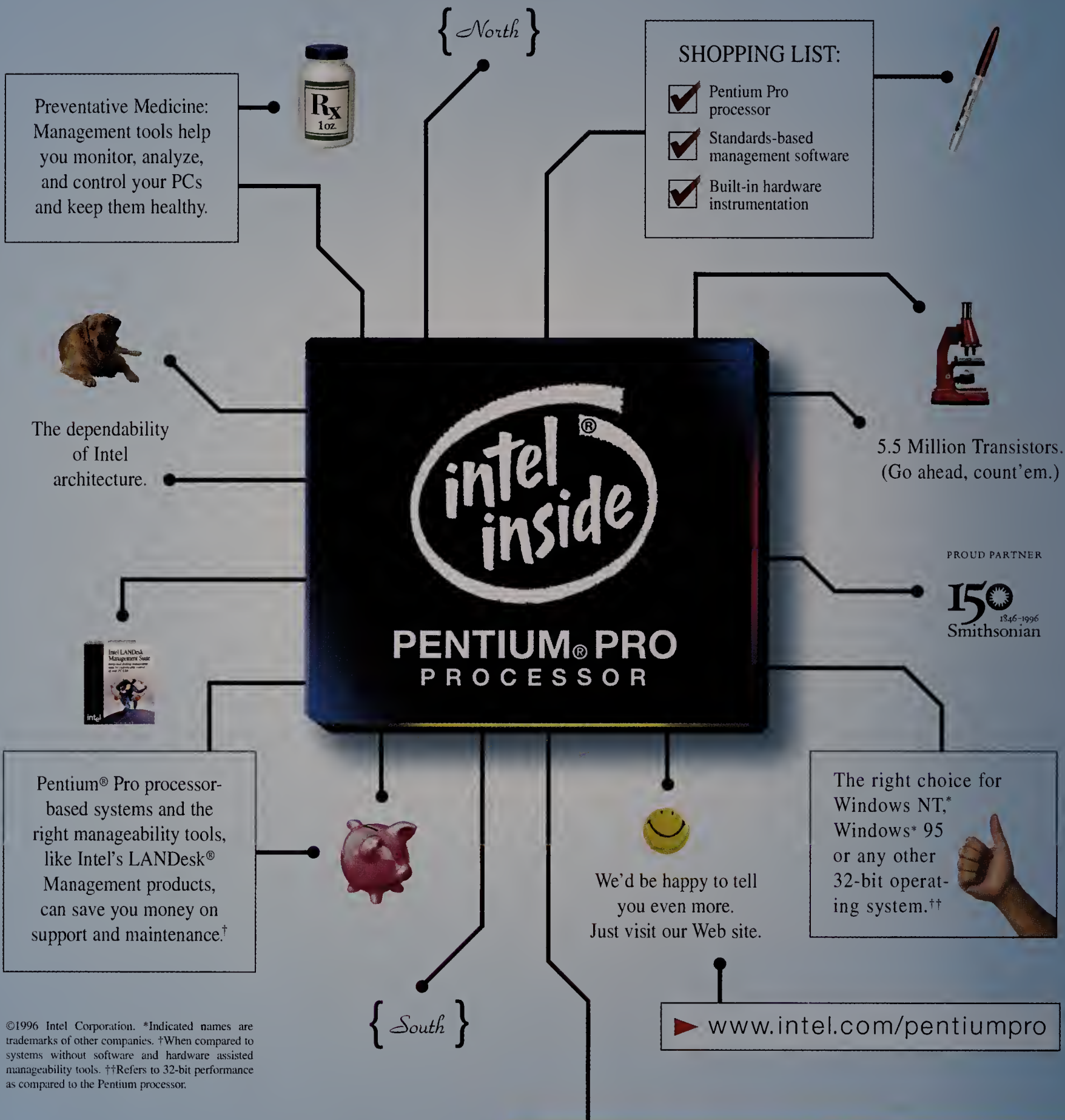
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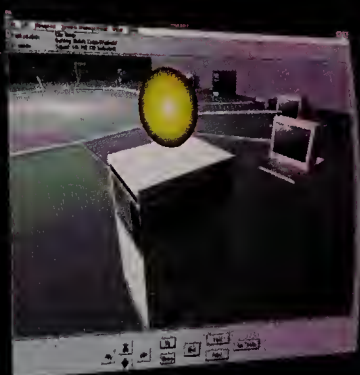
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Electronic commerce is the **56**
core of Fruit of the Loom's
Web development project.
Cover photo by Erica
Freudenstein



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By Christopher Koch

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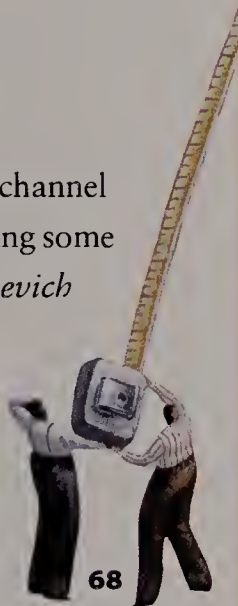
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Fruit of the Loom is developing an online distribution channel that lets its competitors include products for free, leaving some to wonder if Fruit has gone bananas. *By Lynda Radosevich*

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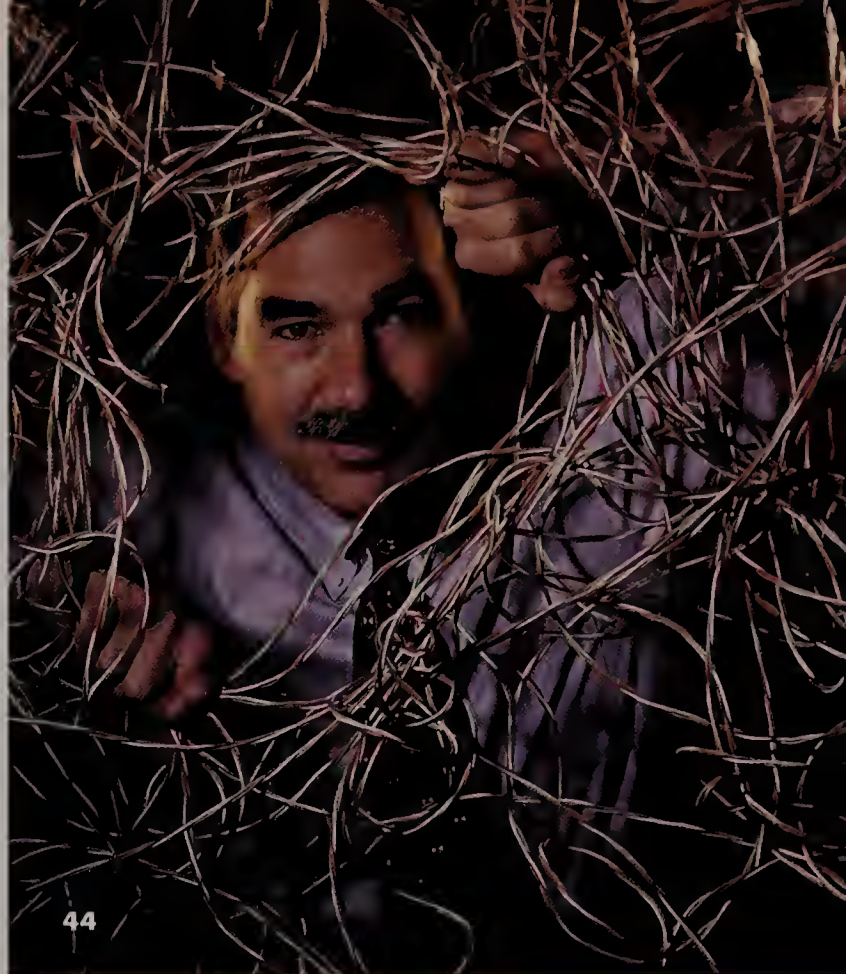
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For CIOs, seconds-in-command can be reliable partners—and sometimes even their best friends.
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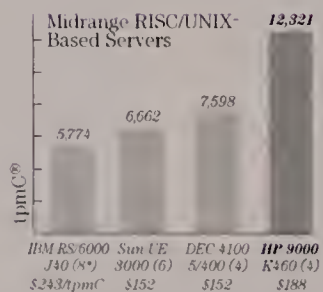
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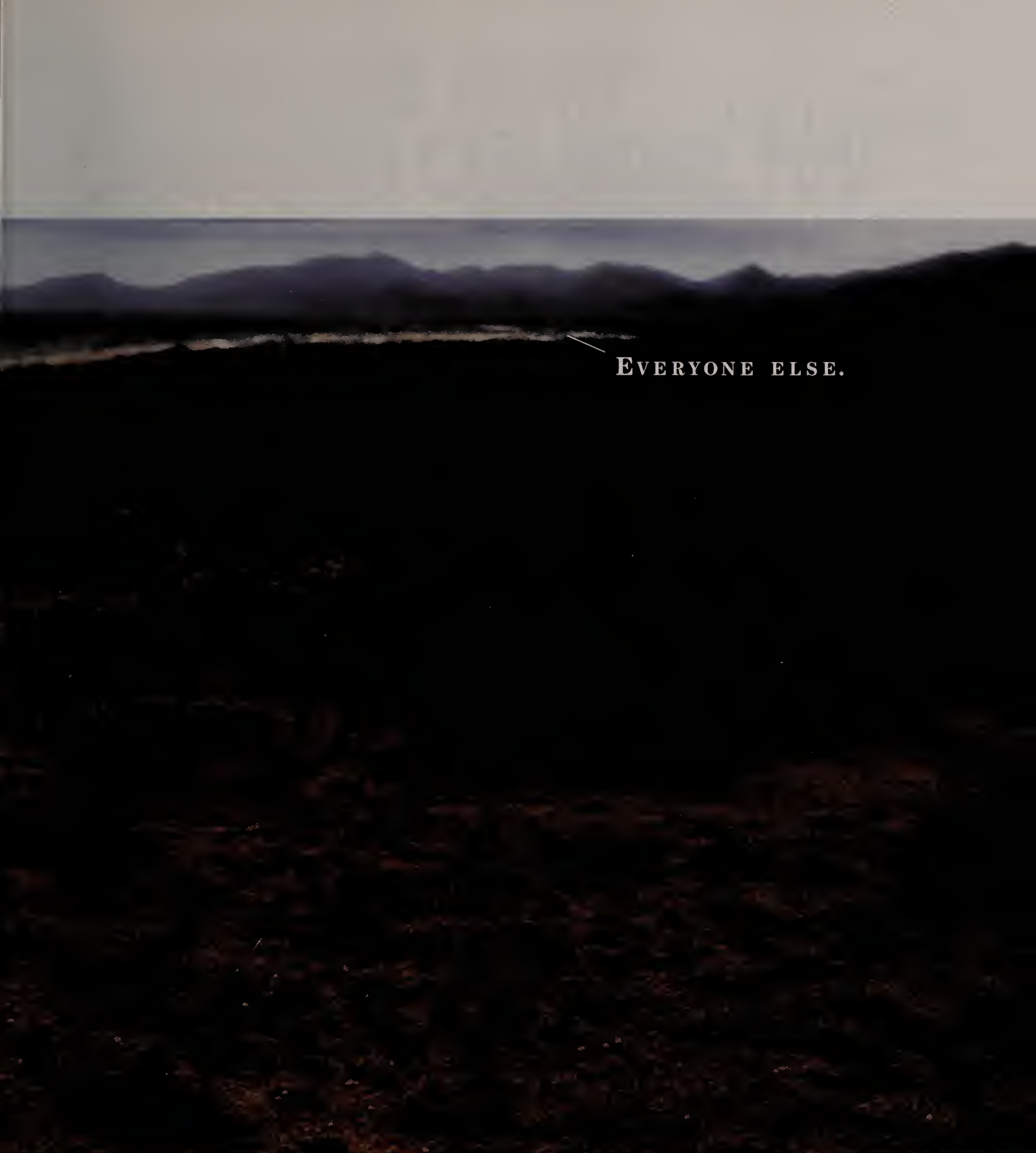


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TRACKING TENURE

Executive Turnover A summary of *CIO* and *Human Resource Executive* magazines' survey on executive tenure. We offer further statistics, research and other resources related to the topic.

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LOOKING BACK

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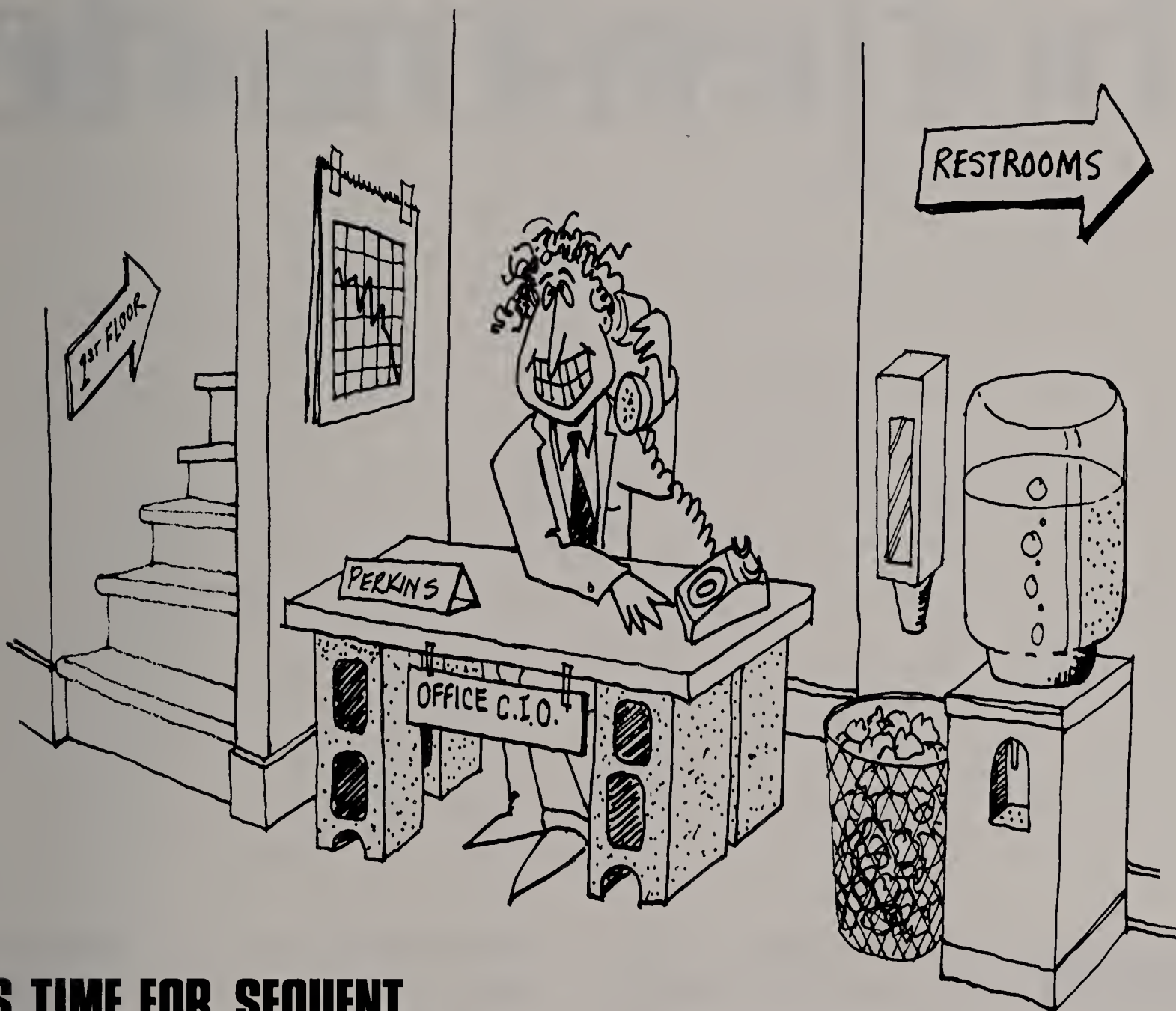
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In Box

LETTER FROM THE EDITOR, READER FEEDBACK AND HOW TO REACH US

The IS services group in the future will function like a utility: It will provide necessary services that are all but transparent to the people using them.

Do you feel threatened by that statement? I used to. When I first heard the concept, it was posited that information technology would be so basic a service someday that technology management would be like buying appliances and plugging them into the wall. That didn't sound very

strategic. It didn't imply much need for a brilliant business/technology leader to head up the function. And I didn't like the idea of someday editing a magazine about IT toaster ovens.

But a few weeks ago, I had a conversation with Louis Burns, CIO at Intel Corp. Burns, who is something of a champion of the utility concept, describes it more like this: IT should be no more intrusive or mysterious to an organization's business users than the electricity delivered to their homes. It should be, he says, "stable, reliable and dependable but fast-moving," and the mechanisms that make it all happen should be transparent. In other words, to the user it should be no trickier than plugging in that toaster oven.

But to the IS group—now that's something altogether different. Burns in no way suggests the utility concept is an easy thing to pull off. On the contrary, making it happen is a remarkable achievement for an IS executive. It's like art or professional sports: The best performances look effortless but are the fruit of real skill, dedication, inspiration and hard work. Yes, technology is getting better, but it's not yet getting easier. All that improvement has led to a serious degree of complexity.

If you harbor any doubts that the need for sophisticated information management capabilities is increasing, you should read Senior Writer Christopher Koch's article "The Integration Backlash: Sounding the Alarm," beginning on Page 44. The article looks at the risks inherent in the trend toward tightly integrated systems. "Having all this connectivity is dangerous," says Clint Petty, a consultant and president of DCMS Inc. who focuses on integration issues. With organizations' technologies and business processes as inextricably linked as they've become today, systems gridlock means business gridlock, writes Koch.

Is "utility" a dirty word? Or is it a nirvana that only the most talented CIOs can attain by dint of keen business insight and lots of hard, clever work behind the scenes? Let me know what the term means to you.


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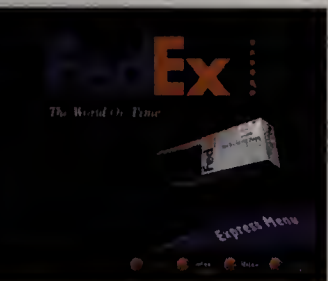
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In Box

THE SELLING GAME

Your Sept. 15, 1996, article about reengineering the sales force, "Covering New Territory," was very timely and addressed some important issues.

The article noted that sales-force automation (SFA) is quickly being replaced by concepts such as opportunity management, customer asset management, total sales quality and virtual selling. True enough.

But those concepts still miss the same point that SFA did. Selling is not a process. Nor can it be made into one. Yet numerous gurus are preaching the need to "processitize" sales in a linear manner, then equip salespeople with a computer system to support it. They fail to recognize that selling is very amorphous.

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The point was made correctly that selling should not be the focus of attention; how people buy should be. But most people don't buy exactly the same way. So structured sales processes can prevent salespeople from negotiating the unexpected twists and turns of each customer's buying approach.

That is not to say that adhering to a structured selling methodology is not useful for providing a general framework in which sales and marketing personnel can work. But "sales automation" software vendors have incorporated those selling methodologies into their software with images of sales funnels, sales cycles or sales

pipelines to describe a sales process. That means salespeople are now responsible for dragging prospects through a process involving a sequence of selling steps that, in many cases, have nothing to do with their buying situation.

The best selling process is not a process at all but a set of skills and tools to facilitate how customers buy. A process should not be wrapped around the sales and marketing function. Instead, customer-contact personnel need a flexible capability to adapt to each unique buying encounter. A structured selling methodology tries to make selling into a game of chess. But it is clearly a game of Nintendo, where rapid reflexes and information access provide the advantage.

After all, unlike chess, where you can strategize several moves in advance, a Nintendo player has to remain alert constantly to the next, unexpected occurrence. Just watch sales-automation vendors use their own software. Therein lies the truth.

Peter Perera

President

The Perera Group

Andover, Mass.

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MORE SAP COVERAGE

I just recently started receiving your magazine and like it very much!

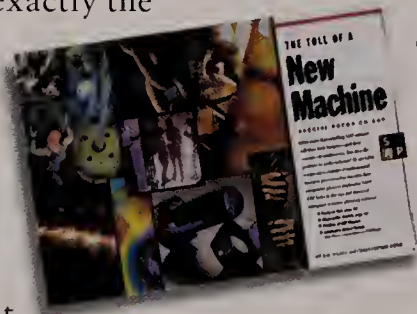
I was especially interested in your articles on SAP ["The Toll of a New Machine," June 15, 1996] and was wondering if you've thought about having a section on SAP in every issue.

There is so much info that could be included, such as what's new with SAP and problems/suggestions to share between users, etc. Just a suggestion....

Connie Kelly

Senior Information

Technologist



While SAP has certainly had an enormous impact on the business world, the issues surrounding enterprise systems go beyond a single vendor. For more on the topic, see our three-part series on "The Integration Backlash: Sounding the Alarm," beginning on Page 44.



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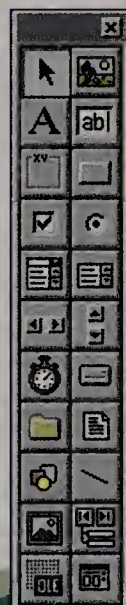


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Publisher's Note

So you think you have a Web project worthy of mention? Here's your chance to let us know.

CIO's sister publication, *WebMaster*, invites you to nominate your company's Web initiative for the WebMaster 50/50 Awards, which recognize 50 outstanding Internet and 50 outstanding intranet projects in the business, government and nonprofit arenas. The

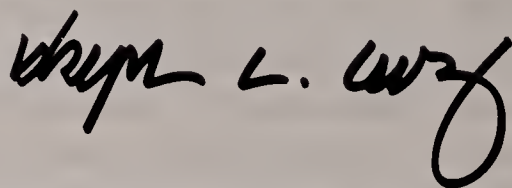
WebMaster 50/50 will honor those organizations whose Web sites deliver business value through the innovative use of design, technology, content and functionality. The winners and their organizations will be featured in the August 1997 issue of *WebMaster* and on the magazine's Web site at *www.web-master.com*.

You can nominate an entire Web environment, a single site or a single application. Keep in mind that a Web project will be judged on how well an innovative application or site has met your organization's business

objectives. For instance, has your company formed a collaborative work-group environment on the Intranet, set up online training or developed a communications path with strategic business partners? Have you executed a successful marketing or promotional campaign, created new markets or developed a unique customer service model?

One of the most important criteria the WebMaster 50/50 judges will examine is business value. We realize measuring business value gained from the Web is no easy task. But we encourage applicants for the award to look beyond straight ROI and take into account cost avoidance, new marketing opportunities, increased productivity, new products and services, and business-process transformation.

An application form will be available in the January issue of *WebMaster*. If you do not receive *WebMaster*, you can fill out a "Call for Entries" form at *www.web-master.com* starting Jan. 13, 1997.



P.S. Speaking of business value, the CIO Enterprise Value Retreat has expanded its format, giving you an extra day to hear from industry experts on IT value metrics and network with peer CIOs. The 1997 Enterprise Value Retreat will be held Feb. 2-5 at The Ritz-Carlton Laguna Niguel in Dana Point, Calif. Call 800 355-0246 or visit our Web site at *www.cio.com* to register for this annual event.

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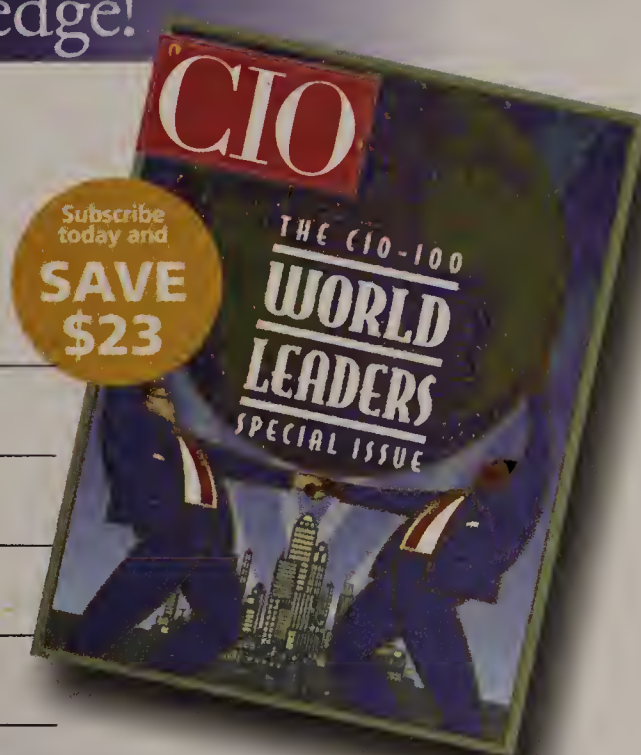
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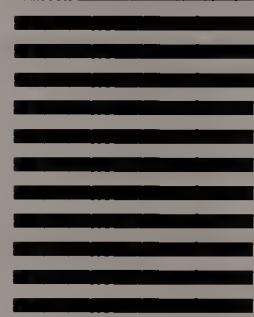
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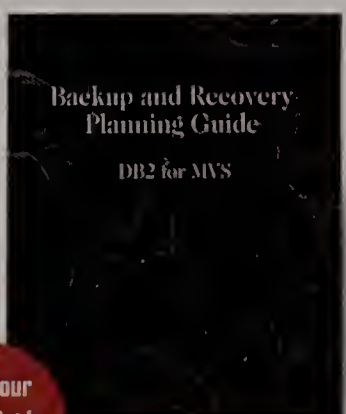
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Trendlines

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Edited by Cheryl Dable

Taking a Swipe Out of Lines

NEW TECHNOLOGY Cash registers in grocery stores might not be considered high-tech, but some stores are using newfangled versions to take the express lane to the cutting edge. In Kentucky, upstate New York and New Hampshire, several groceries are experimenting with self-serve machines that allow shoppers to buy it and bag it without a clerk.

The machines, developed by Optimal Robotics Corp. in Montreal, and manufactured by Spectra-Physics Scanning Systems Inc. in Eugene, Ore., combine technologies used in supermarket scanners, automated teller machines, change makers and automated gasoline pumps. Optimal's U-Scan Express allows shoppers to scan, weigh, bag and

pay for their own groceries. If the weight of an item added to the bag doesn't match that of the item scanned, the machine requests the user to rescan the item. If a product can't be scanned, attendants can identify it from a remote location through a surveillance camera, and if a shopper buys items like cigarettes or alcohol, attendants can check their identification for proof of age with the camera as well.

Henry Karp, executive vice president of Optimal, says the U-Scan was created to lower the costs of current checkout procedures. Two U-Scans can fit in the space of one checkout lane, and people can scan and bag their own groceries faster than a clerk, he says. "We felt that we could

apply similar kinds of conceptual technology used by ATMs," Karp says. "We've taken a lot of off-the-shelf components and technology and integrated them."

This development comes at a time when scanner technology is taking a beating from consumer advocacy groups. A June survey by the state of Massachusetts of eight Osco Drug stores in Boston that found checkout line scanners rang up incorrect prices about 75 percent of the time, resulting in overcharges of about \$3,000. Saying prices had been entered into the system incorrectly and that a computer in Chicago had overridden scanner computers in Boston, Osco wrote a \$30,000 check to a city scholarship fund and gave away almost

Reality Check in Aisle One, Please

SCAN OR SCAM? Price scanners have been tagged with a bad rap.

That conclusion from the Food Marketing Institute (FMI), a Washington-based nonprofit association that conducts research for its membership of 1,500 food retailers, wholesalers and customers. Refuting published estimates that scanning errors cost consumers anywhere from \$1 billion to \$2.5 billion annually, in its backgrounder "Shelf Price Accuracy in Supermarkets That Scan," FMI says those estimates rely on selective data and that an equally selective counter argument would show that scanner *undercharges* actually *save* consumers billions each year. The truth, FMI says, is that there is no reliable data on scanner errors because it was only in 1995 that the National Conference on Weights and Measures developed a standard methodology to generate such data. That system, which promises a rain check for reliable error estimates, has been tested throughout the United States and is being adopted by many states, FMI says.

FMI has created a best practices guide, "Price Verification—Ensuring Accuracy at Store Level." You can order it by writing to FMI Publications and Video Sales at 800 Connecticut Avenue, N.W., Suite 500, Washington, DC 20006, calling 202 452-8444, or visiting the Web site at www.fmi.org. ■

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Trendlines

\$200,000 worth of free food to make amends.

Blaming errors on computers is nothing new, but the hubbub in Boston happened as the supermarket industry was lobbying Massachusetts lawmakers to allow shops to stop pricing products individually if shelf and scanner prices were coordinated electronically. Massachusetts, one of few states that require stores to price individual items, is a hotbed for scanner watchdogs, and Osco isn't the only company in the dog house. Two months after Osco came under fire, Massachusetts officials claimed checkout scanners at five Lechmere stores in the state reported prices incorrectly more than half the time, usually resulting in overcharges. Lechmere officials also said a computer in Chicago overrode local scanning systems. —Heath Row

Room With More Than a View

SWEET SUITE You've seen it in futuristic movies: voice-recognition systems that turn on lights, doors that open by themselves and multimedia televisions connecting broadcast TV, computers, and wireless communications. Well, forget the movies and check out (or check into) Cyber Suite.

The Century Plaza Hotel and Tower in Century City, Calif., has introduced a new guest-room environment that includes a door that recognizes the card key in your pocket and opens automatically and a bath that can be drawn at your behest.

Findings Client Servitude

Not Very Well Served

The move toward client/server computing is still barreling ahead like an ox on Rollerblades, but you probably didn't need a survey to figure that one out. Still, Datapro Information Service's 1996 Client/Server Issues poll went beyond the obvious and found some interesting details about the move. To wit:

- Scalability jumped to third on the list of benefits; last year it finished sixth. Dennis Byron, the senior analyst who wrote the report, says that indicates an important maturing of users' experience. According to Byron, companies are finally recognizing that scalability is the only benefit directly attributable to client/server migration. The "implementation experience is beginning to supplant opinions based on supplier promises and propaganda," he writes.
- The percentage of respondents who decided to implement client/server rose to 46 percent, up from 25 percent last year. Surprisingly, the number who have decided against the move also rose, from 5 percent last to year 12 percent in 1996. Byron attributes that to a large number of "undecideds" in the 1995 survey falling off the fence this time around: Most landed on the side of "yea," while the "undecided" contingent fell from 63 percent last year to 29 percent.
- The cost of products and services used to implement client/server systems is divvied up as follows: Hardware takes the biggest slice (33 percent), followed by systems and operating software (16 percent), applications software (16 percent), database management systems (12 percent) and development tools (9 percent), plus small slices for outside consulting and training services.

However, based on respondents' estimates, the time required for development doubles the expenses of client/server. In other words, development time costs companies as much as the sum of all the components listed above.

The most commonly named disadvantage of client/server computing is lack of expertise (listed by 48 percent of respondents), followed by cost (33 percent), systems management issues (32 percent), immature standards (28 percent) and organizational adjustments (27 percent).

The response base for the survey was 720 professionals, distributed fairly evenly among North and South America, Europe and Asia/Pacific. The full survey report costs \$250; call Datapro's Lucinda Washington at 609 764-0100, Ext. 2897.

—Derek Slater



Pick One

Percentage of IS professionals who named these the top benefits of client/server

Better end-user access to data

26

Flexibility to adapt to change

14

Scalability

11

Productivity improvement

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Access to legacy data

5

Speed of development and deployment

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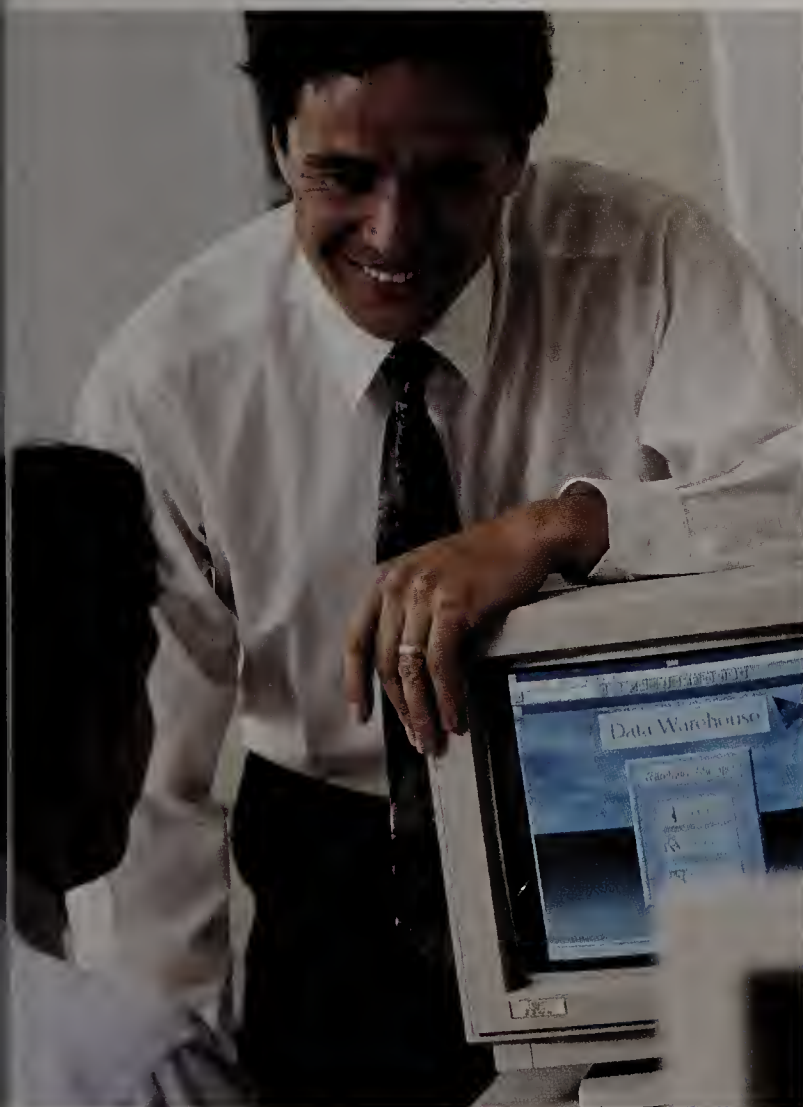
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Trendlines

Technology by Master-voice's "Butler-in-a-Box," from Automated Voice Systems Inc. in Yorba Linda, Calif., allows for the voice-activated environment. The computerized control combines speech recognition and telephone activation

with human logic to operate lighting, draperies, climate control, television and entertainment center. You can even call your "butler" from pool-side and have that bath drawn and waiting upon your return to the suite. ■

When You Care Enough to Automate

DIGITAL GREETINGS "Roses are red/violets are blue/I'm getting help from my computer/'cause I want to be your suitor."

How's that for heartfelt sentiment? Hallmark Cards Inc. and American Greetings Corp. have both introduced systems that allow customers to delegate the hassle of staying in touch with their friends and loved ones to the technicians of the greeting card giants.

Senders can select or design a card electronically, type in the recipient's name and address, and click on an "order" icon. A printed card is then sent to the chosen recipient. The programs will even send flowers or chocolates with some cards after users customize the image on the front, the prose inside and the logo on the back.

Miss Manners might not approve of the impersonal nature of this business, but it beats the wrath of Aunt Matilda when you forget her birthday. Computer-generated cards are sure to look a little clunky compared with their old-fashioned foil-and-lace predecessors. But these superficial concerns may not matter to younger consumers who have been fully wired since childhood. And that's the group card makers say they're trying to attract. ■



No Groupware-withal

You know all those lovely team-building, knowledge-sharing, warm-fuzzy-giving features that groupware offers? Most companies don't use 'em. In fact, the function most heavily used in typical groupware software is (yawn) e-mail. These tidbits about groupware use (or lack thereof) appear in a recent study of organizations using Lotus Notes by the John E. Anderson Graduate School of Management at UCLA and Arthur Andersen Business Consulting:



Most organizations still use groupware primarily for its most basic communication function—sending and receiving e-mail.

SOURCE: UCLA/ARTHUR ANDERSEN GROUPWARE USAGE STUDY

The Next Big Thing

FAD-O-RAMA First there was TQM; then there was BPR. Ready for the next spoonful of alphabet soup? It's PE. No, not the phys. ed. of your knock-kneed junior high days. Process excellence.

That's according to Andersen Consulting and The Economist Intelligence Unit (publishers of *The Economist*), joint au-

thors of the report "Building Process Excellence." Process excellence combines the incremental improvements of total quality management and the more revolutionary steps associated with business process reengineering. "In order to have process excellence, you need a portfolio of changes in your arsenal—sometimes

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Trendlines

According to a survey of 800 people, 25- to 34-year-olds believe they can use technology to enhance their economic prospects, improve their career opportunities and streamline their personal finances.

Source: Global Strategy Group, for the American Stock Exchange

dramatic, sometimes incremental," says Timothy Admonius, managing partner of the Americas process competency practice for Andersen Consulting and one of the study's authors.

A commitment to ongoing process change of both sorts is the competitive advantage of the future, according to Admonius. "Process excellence is really saying that, as a strategy, how you do something is maybe more important than the product itself," he says.

IT has a unique role to play in building process excellence. Conventional wisdom says to look first at the processes that require change and then find the technology that will enable them to do so. Taking the reverse approach can be very powerful, Admonius says: Look at technology and imagine first what it might enable. "Start with, 'What if I could know every customer as an individual and had direct access to all of them? What if I could customize my products for each customer?'" he says. The "what-ifs" raised by new technologies can point to more innovative process change.

The study profiles eight pioneers of process excellence. Among their experiences:

■ Thames Water Utilities

Ltd., a Reading, England-based utility, reworked its logistics process for delivering services and products to its internal field operators. Then the company cut its number of suppliers from 14,000 to less than 5,000. One of the key elements of the overhaul involved writing detailed specifications

for the IT systems needed to manage the revamped inventory and warehouse management processes. In addition to slashing the supplier base, Thames Water cut its inventory by 70 percent and consolidated 23 warehouses into a single facility.

■ Belgacom is Belgium's state-owned telecommunications provider. In 1998, the company will confront a new challenge: market deregulation that will open the floodgates of competition. Just a few years ago, Belgacom's service was notorious for long delays in filling new orders or making repairs. The company undertook dramatic process

redesign to foster better provisioning and repair; as that initiative continues, Belgacom is also tackling incremental process changes and organizational redesign.

While each company profiled is at a different stage in the use of IT, "they all recognize that technology is the key enabler of change," says Admonius. Just remember once you start attending conferences and reading management tomes by instant gurus on this PE stuff—you read about it here first.

For a copy of the report, call The Economist Intelligence Unit at 212 554-0600.

—Derek Slater

A Laughing Matter

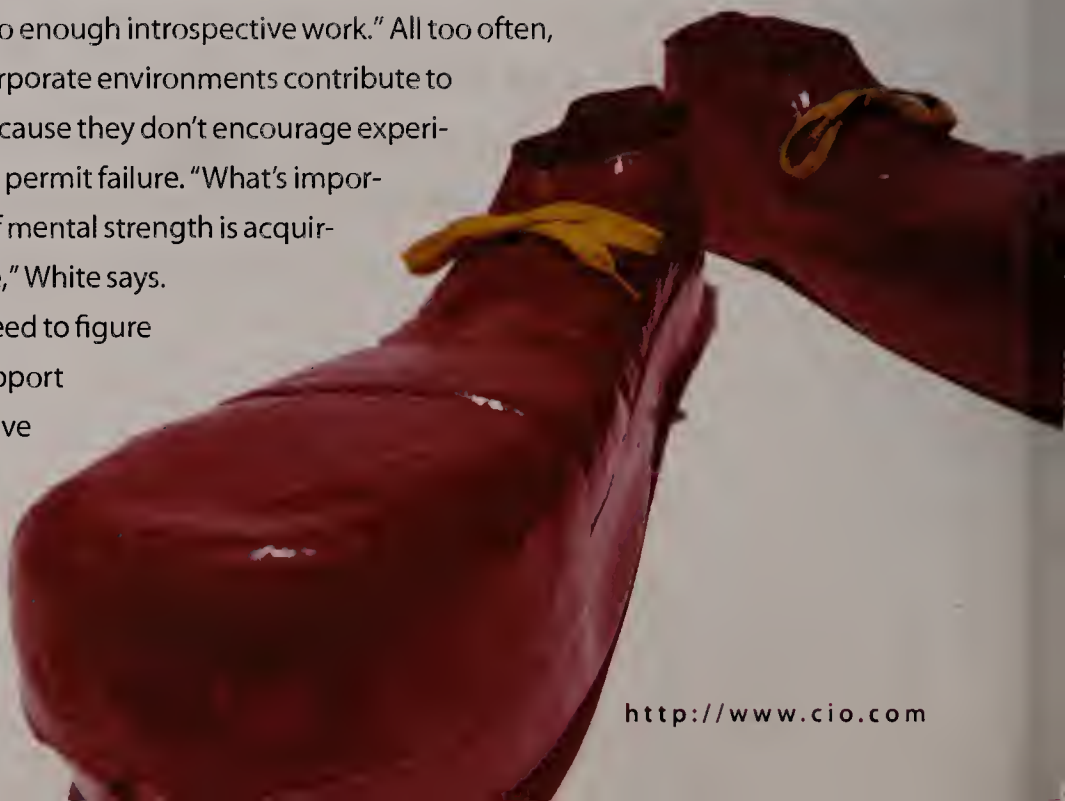
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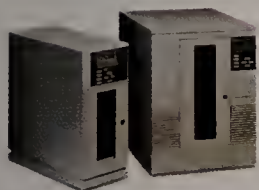
When Dr. Bowen White chats to business folks about reducing stress, they think he's just a clown. And the red nose, big shoes, sight gags and juggling tricks don't dispel that impression. Since 1991, White has been appearing as Dr. Jerko, the clown-proctologist, when he lectures on the finer points of stress management and preventive medicine.

"As a clown, I have a license for lunacy and nuttiness that makes people drop their defensive attitudes," explains the Kansas City, Mo. physician. By goofing around with audience members and making them laugh, White aims to show that fun has a role in combating stress and fostering a sense of well-being.

"Much of what we're taught to do as adults isn't healthy," White contends. "We take ourselves too seriously, we lose our curiosity and open-mindedness and we don't do enough introspective work." All too often, White finds, corporate environments contribute to stress levels because they don't encourage experimentation and permit failure. "What's important in terms of mental strength is acquiring knowledge," White says.

"Companies need to figure out ways to support learning and give their employees permission to be human." ■





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Dear Executive:

On February 2-5, 1997, CIO Communications, Inc. and its Partners will host the Fifth Annual **Enterprise Value Retreat** at the Ritz-Carlton Laguna Niguel in Dana Point, California. This Retreat brings together over 200 corporate, government, and business school thought leaders to examine the dramatically changing structure in the IT environment of the late '90s.

The Retreat will be facilitated by F. Warren McFarlan, Senior Associate Dean, Director of External Relations and Ross Graham Walker Professor of Business Administration, Harvard Business School. He will lead participants through the increasingly difficult path of IT acquisitions, with innovative discussions on outsourcing, the CIO as in-house systems integrator, and risk and investment management.

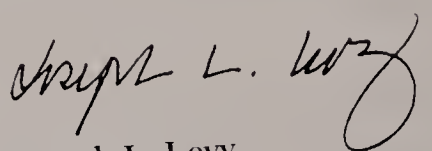
You will participate in a case study with the CIO and CEO of a \$2 billion power cable manufacturing corporation, led by Professor McFarlan. And, John J. Sviokla, Associate Professor of Business Administration, Harvard Business School, will lead a case study on the virtual value chain and the transition from marketplace to marketpace.

Participants are invited to attend the **Enterprise Value Awards Ceremony and Dinner** on Tuesday evening. Proudly underwritten by AT&T Solutions, the ceremony and dinner will honor recipients for their achievements in demonstrating enterprisewide Information Technology benefits.

In 1996, CIOs from companies such as American Express, United HealthCare, Walt Disney Pictures & Television, Honeywell, Safeway, ConAgra, Georgia Pacific, Cornell University, and The Dial Corporation were privy to the most innovative thinking in IT methodology, planning and management. Make this February your opportunity to join this prestigious group of IT leaders and learn the latest methods in finding and defining the value of Information Technology.

Visit our Web site at <http://www.cio.com> for more information. You may also complete and mail or fax the Enrollment Application on the back of the enclosed brochure to 508-879-7720 or call us at 800-355-0246.

Sincerely,

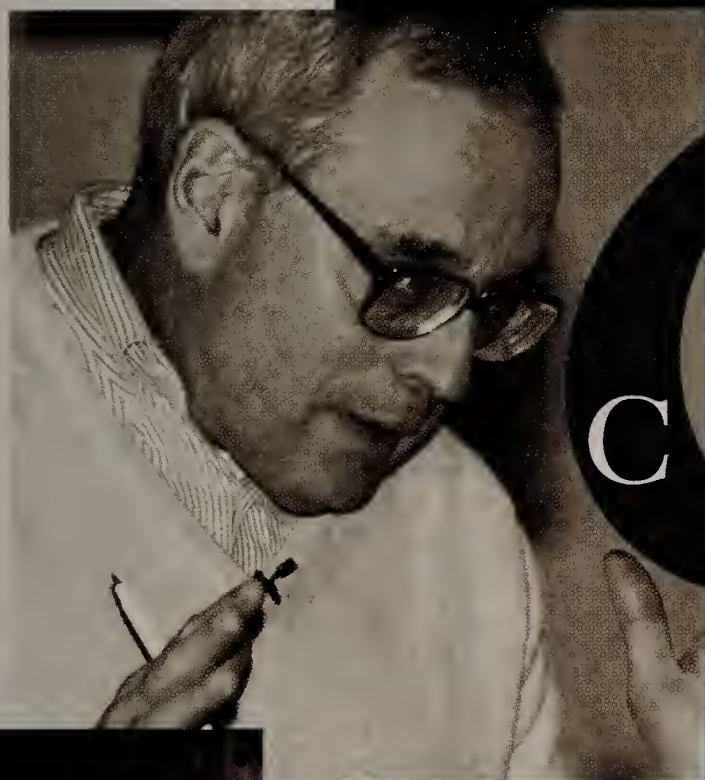


Joseph L. Levy
Group Publisher & President
CIO Communications, Inc.



Lynda Rosenthal
Senior Vice President & General Manager
Executive Programs

ENTERPRISE VALUE RETREAT



AWARDS CEREMONY

Join CIOs and other corporate thought
leaders from Fortune 1000 organizations for a
three day immersion assessing the enterprisewide
value of IT and the virtual value chain.

Participate in a case study with the CEO
and CIO of a \$2 billion power cable manufacturing
corporation. The Retreat will be facilitated by
F. Warren McFarlan of the Harvard Business School.



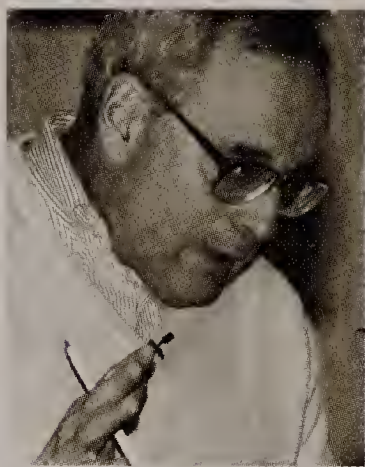
As a Retreat participant, you are invited to be our guest at CIO's Enterprise Value Awards ceremony and dinner to be held Tuesday evening, February 4. The Award recipients are being honored for their achievements in demonstrating ROI from Information Technology.

Proud Underwriter of CIO Magazine's
Enterprise Value Awards



"We are in the midst of a technology discontinuity which is profoundly impacting channels of distribution, market structures, organization of work and service standards. Good management is at the core of success."

— F. Warren McFarlan
Senior Associate Dean
Director of External Relations
Ross Graham Walker
Professor of Business Administration
Harvard Business School



You will take part in a real-life case study facilitated by F. Warren McFarlan, Senior Associate Dean, Director of External Relations and Ross Graham Walker Professor of Business Administration, Harvard Business School, designed to lead participants through the often tangled path of Information Technology acquisitions. From conception to implementation, you will learn how to justify costs, budget more effectively, sell ideas to internal management and users and gain a better understanding of the enterprisewide strategic implications of your decisions.

SUNDAY, FEBRUARY 2

8:00AM-10:30AM	Registration and Breakfast
12:30PM	Golf Tournament at Monarch Beach Golf Links
3:00PM-6:30PM	Registration
6:30-7:00PM	Retreat Introduction F. Warren McFarlan Senior Associate Dean Director of External Relations Ross Graham Walker Professor of Business Administration Harvard Business School Join Retreat participants in an event synopsis
7:00PM-10:00PM	Partner's Cafe Meet other participants and Retreat Partners

Enterprise Value Retreat Partners:



BOOZ ALLEN & HAMILTON



MONDAY, FEBRUARY 3

- 7:30AM-8:15AM Breakfast
 8:15AM-8:30AM Welcome and Opening Remarks
Joseph L. Levy
Group Publisher & President
CIO Communications, Inc.
 8:30AM-10:00AM Managing in the Marketspace
John J. Sviokla
Assistant Professor of Business
Administration
Harvard Business School
Implications for the CIO of shifting
from marketplace to marketspace
 10:00AM-10:30AM Mid-Morning Break
 10:30AM-11:15AM Exploiting the Virtual Value Chain
John J. Sviokla
Showing how to extract value in
"place" and in "space"
 11:15AM-12:00PM Cybersmith Case Study
John J. Sviokla
Examine this tech-retail-store-cafe
entrepreneurial Web venture
 12:00PM-1:30PM Luncheon
 1:30PM-2:30PM Concurrent Sessions
Choose among several sessions
offered by our Partners
 2:45PM-3:45PM Concurrent Sessions—Repeated
 4:00PM-5:00PM Summation of day's case study and
 preview of Tuesday's case study
 6:30PM-7:30PM Partners' Cafe
Meet other participants and Retreat
Partners
 7:30PM Dine Around or Captain's Table

TUESDAY, FEBRUARY 4

- 7:30AM-8:15AM Breakfast
 8:15AM-10:00AM Business Process Redesign and the
 Role of Intranets
F. Warren McFarlan
Changes in infrastructure being facili-
tated by today's new technologies
 10:00AM-10:30AM Mid-Morning Break
 10:30AM-12:00PM Enterprise Value Case Study:
 Southwire Corporation
F. Warren McFarlan
View, in depth, this privately-held \$2
billion power cable manufacturing
company

- 12:00PM-1:30PM Luncheon
 1:30PM - 3:45PM Case Study Workgroups
Break into small groups to develop
the case
 4:00PM-5:00PM New Ways of Assessing IT Services
F. Warren McFarlan
New reflections on the make/buy
decision
 6:30PM-7:15PM Enterprise Value Awards Reception
Meet the Award winners and judges
 7:15PM Enterprise Value Awards Ceremony
 and Dinner
Join CIO and AT&T Solutions in
recognizing the winners of the
Enterprise Value Awards

WEDNESDAY, FEBRUARY 5

- 7:30AM-8:15AM Breakfast
 8:15AM-9:15AM Case Study: Roundtable Presentations
 and Discussion
F. Warren McFarlan
Examine breakout solutions
 9:15AM-10:00AM Case Study: Epilogue and Reflections
F. Warren McFarlan
Roy Richards, Jr.
Chairman and CEO
Southwire Corporation
Lee Hunter
Vice President
Environmental & Technical Support
Southwire Corporation
Review case decisions with
company executives
 10:00AM-10:30AM Mid-Morning Break
 10:30AM-11:45AM Delivering IT Results in the
 Information Mediated Age
F. Warren McFarlan
Techniques and processes for
ensuring attractive bottom line results
 11:45AM-12:00PM Summary
F. Warren McFarlan

Reservation Form on Back Page

E N T E R P R I S E
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February 2-5, 1997
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Which of the following statements describe your personal involvement in the acquisition of information technology products and services for your organization? (Check all that apply)
Do you...

☐ Identify or establish the need

☐ Specify/recommend brands or vendors

☐ Initiate the purchase

☐ Authorize the purchase

☐ Evaluate brands

☐ Approve the budget

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☐ Check enclosed

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Signature _____

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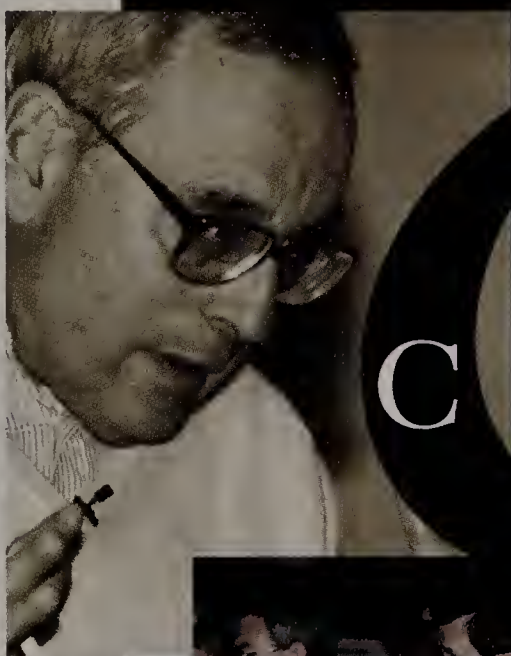
Your fee includes Retreat attendance, Retreat-related materials, meals, entertainment and the Enterprise Value Awards Ceremony and Dinner.

Please make your hotel reservations by calling the Ritz-Carlton at 714-240-2000.

Be sure to mention you are attending CIO's **Enterprise Value Retreat** to receive the discounted rate of \$215.00 per night. All fees must be paid prior to the Retreat. No refunds or cancellations will be given after December 27, 1996. **CIO** reserves the right to limit attendance to practitioners and Partner organizations.

**To enroll visit our Web site at <http://www.cio.com> or
fax this completed form to us at 508-879-7720.**

ENTERPRISE VALUE RETREAT



AWARDS CEREMONY



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Value Awards



Executive Counsel *By Christopher Koch*

MANAGING YOUR CAREER, STAFF AND PROFESSIONAL RELATIONSHIPS

The Way You Say It

When you're trying to get through to the troops, your medium can be as important as your message

THIS JUST IN FROM THE Department of Bright People Doing Stupid Things: Your most thoughtful and inspiring messages, whether they are sent via paper, via video or in person, might backfire colossally. The reason why won't become clear until after the fact—if at all—because it will have nothing to do with what you said. Some very intelligent people at General Electric Co.'s Fairfield, Conn., corporate finance department found themselves in that particular pickle recently when they wrote an innocent memo about the need to rein in business expenses. Finance had carefully outlined some clear expense

goals and guidelines—all reasonable—for curtailing costs, with a nice business-case kicker at the end: If we keep within these guidelines, we can save the equivalent of one business unit's revenue each year.

Finance was understandably mystified when the business units went ballistic. As it turned out, no one was angry about the content or the goals of the memo; the hoopla was caused by much more subtle factors. Like context. At the time, GE was in the midst of a "workout," which involved downsizing and had been touted as a plan to empower the various GE business units to make their own decisions on business policies. A memo that

dictated expense policies—however politely and reasonably—was bound to be viewed as hypocritical.

But even if GE's business units had not been in a sensitive mood, the memo could not have done the best job of communicating the changes in policy simply because it arrived on paper. "Written communication is lousy at changing people's minds," says Steven Kerr, vice president of corporate leadership development for GE, who winced as he recalled the expense policy incident.

Kerr believes there are only three reasons to communicate in business: to inform, persuade or empower. Furthermore, only a few communication "channels" are available: correspondence on paper, oral presentations and "symbolic" events, like the CEO painting over the number on his reserved parking space. And like a kid trying to match an elephant-tagged Garanimal shirt with elephant-tagged Garanimal pants, if you don't pair the right message with the right medium, you'll wind up looking foolish.

Pass on the Pulp

GE's finance group wanted to persuade the business units to change the way they dealt with business expenses—an ambitious goal. If you think about the number of times a memo has changed the way you view your business (nil, zippo, zilch), you realize why persuasive writing should be left to the literary types—not the folks in finance. "People didn't understand the message because the channel alienated and offended them," says Kerr. This is perhaps the biggest danger of turgid memos or careless e-mail directives: their power to tick off everyone involved. "Written is one-way. The best you can do to encourage dialogue is to say, 'Contact me with questions.'" But more important is the diffuse impact the message has on its audience. "Writing is such a se-



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Executive Counsel

The Responsibility Grid

Knowing your audience can pay off

GENERAL ELECTRIC'S STEVEN KERR remembers moderating a meeting between two notorious corporate enemies: manufacturing and engineering. To make matters worse, the business unit's manufacturing and engineering staffs were located on opposite coasts. "We had a lot of, 'Whose responsibility is this?' going on," says Kerr, GE's vice president of corporate leadership development.

He knew they had only their fondness for quantitative analysis in common. So Kerr set up what is known in the

communications consulting biz as a responsibility grid. Prior to the meeting, each side was asked to pencil in a number from one to six that corresponded to the degree of influence it believed it should have over management issues that affected both manufacturing and engineering. One meant complete control, two meant having veto power, three meant having voting power, four meant consultation was required prior to a decision, five meant supplying information only, six meant basically the other guy takes it. Using the numbers defused tension, and the process appealed to the group's shared interest. The two departments crunched the numbers and came to an agreement on which should do what; the grid worked so well that GE moved them into a single office without any bloodshed.

—C. Koch

ductive medium," Kerr adds. "It's cheap, you can get the message to everyone at the same time, and you go home thinking you've done your job. But you have no way of knowing whether your audience gets it until it's too late."

So when should you put the dangerous pen to paper? Writing is effective only to inform people and help reduce any uncertainty they may feel about a particular issue. For example, memos are good for communicating noncon-

troversial information, like commending people for a job well done.

Saving Face Time

Because the finance people at GE were trying to persuade as well as inform the



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business units, they should have held a meeting to introduce the new expense goals and guidelines, says Kerr. "You can immediately gauge whether your message is confusing people or causing more controversy than you expected because you can see their faces as they are receiving your message," he explains.

Dialogue also gives messengers a chance to consider audience opinions before making a decision. For GE's finance people, a "one-to-many" presentation such as a large group meeting or a videoconference might have defused the situation.

For issues more controversial than expense reports, there are other ways to persuade people besides haranguing them directly. Kerr believes in what he calls the "experiential" channels of communication. At GE's Specialty Materials Dept. business unit, Kerr recently led a meeting asking employees to offer their opinions, complaints and suggestions to the business unit executives. To under-

score the collaborative goals of the meeting, the business unit executives lined up behind the grill at lunch time and served hamburgers to the employees. "That symbolic act said to the employees, 'To honor the reversal in our roles, we're going to serve burgers because we are here to take notes from you,'" says Kerr.

Empowering Employees

A third purpose for communicating to others in the company comes with this added bonus if done well: Other people will solve your problems for you. Kerr calls this "empowering people to provide solutions." Kerr led a workout team at GE's R&D division in which senior management evaluated numbers to provide R&D with the information it needed to make its own cuts. "Senior management presented a chart that showed how every dollar of the R&D budget was being spent," says Kerr. "Then they outlined the dollar amount they thought was necessary and said, 'You come up with the cuts.'"

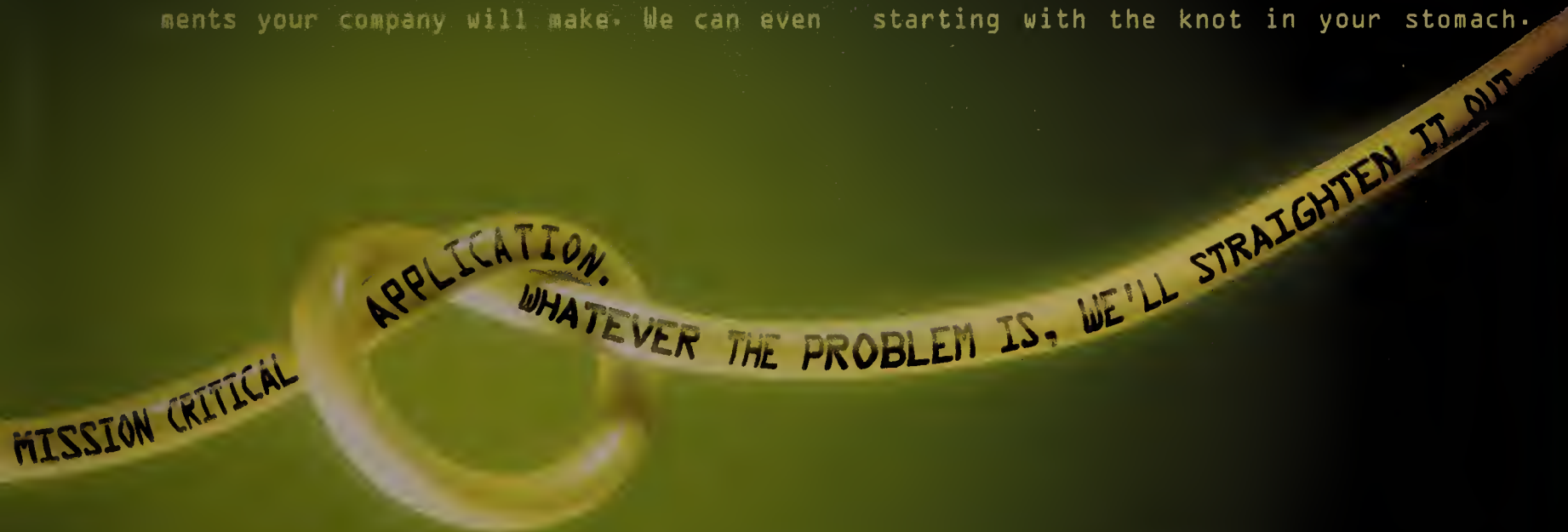
This empowerment stuff is trickier than it sounds. The company demonstrated that the cuts were necessary to the survival of the business and that other departments would also be taking hits. With that established, the R&D managers were motivated to control their own destinies. "Empowerment is management saying, 'I trust your opinion on this,'" says Kerr. "I will provide you with the necessary information, but I'm not going to try to influence your decision beyond reason."

Companies could save money if they focused less on the eye candy of communication—polished delivery, flashy 3-D graphics and ghostwritten prose—and thought about the purpose of the presentation and the proper medium for delivering it. "GE's CEO Jack Welch has a good rule," says Kerr. "He says, 'Have the courage to make it simple.'" **CIO**

Senior Writer Christopher Koch can be reached at ckoch@cio.com.

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Haiku, Cherry Blossoms, Sushi and... Notes?

Japan's culture is unchanged by technology

I'VE ALWAYS SUSPECTED THAT technology by itself doesn't transform the cultures of organizations or societies (or that, if it does, it takes decades to work its magic). This belief was reinforced by a recent trip to Japan during which I discussed technology, information and knowledge management with managers at several different Japanese companies. This was my third trip to Japan, which of course qualifies me to make sweeping generalizations about Nipponese business and culture in the time-honored American tradition. But even if you have no intention of going to Japan yourself, or of working with your organization's Japanese subsidiary, an awareness of how technology and culture coexist in Japan can inform your own change efforts.

In the past, Japanese companies have lagged behind Western business in the use of information technology. While Japan's IT companies have worked diligently to supply the world's desktops (and, more successfully, its laps) with PCs, Japanese businesses historically have been less-willing consumers of IT—17 PCs per 100 workers to the United State's 63, according to market-research firm International Data Corp. (IDC is owned by the same parent company as CIO.) Exceptions to this rule exist, of course: Fax machines were pervasive in Japan before the United States, for example, and CAD systems are common among sophisticated Japanese manufacturers. Overall, however, Japanese businesses have

had far fewer and less-networked computers running less innovative and less communications-oriented applications. The explanations for Japan's IT reticence are manifold, such as the difficulty of representing the language on keyboards and the face-to-face culture of Japanese business.

More important than these explanations are the competitive implications of the technology gap, and they don't seem dramatic thus far. Japan has been in a recession for a few years, but its largest firms are still economic Titans and there are more plausible factors—like the weak dollar—to blame for the recession than the paucity of PCs. The country's miserly IT spending may even have helped it compete. Early in this decade, for example, Ford IS managers concluded that Toyota was spending \$100 less per car on information technology than Ford. It didn't show in the product then, and it doesn't now.

And the differences in technology availability are diminishing. In PCs, for example, the sun is rising fast: Japanese companies are buying them at a much higher rate today than U.S. organizations. Not only Japanese

vendors but also the Western IT giants IBM, Compaq, Dell, Hewlett-Packard and even Apple are doing well in Japanese business markets. Laptops are especially popular. Software for handling the notoriously complex *kanji* character set is now widely available. Even the Internet is taking off: Last year at this time, Tokyo had only two Internet providers; today there are 46. The head of a large consulting firm's Asian practice told me his clients realize they are well behind the West in technology per capita and are determined to close the gap—just in case U.S. managers are right.

Japanese consumer IT markets in some ways surpass the West. Cell phones are everywhere and cost less to use than in the States. Integrated Services Digital Networks (ISDN) are more widely available; there are even ISDN telephone booths scattered throughout Tokyo and Osaka. ATMs are on every corner, electronic point-of-sale systems in every store. And Tokyo's Akihabara district puts our Circuit City to shame, with every electronic consumer product you can imagine highlighted by strobe lights and loud music.

But here's the rub: These technologies don't seem to be changing the way the Japanese people live and work, at least not as much as one might think. On the consumer side, some new technologies like ISDN just

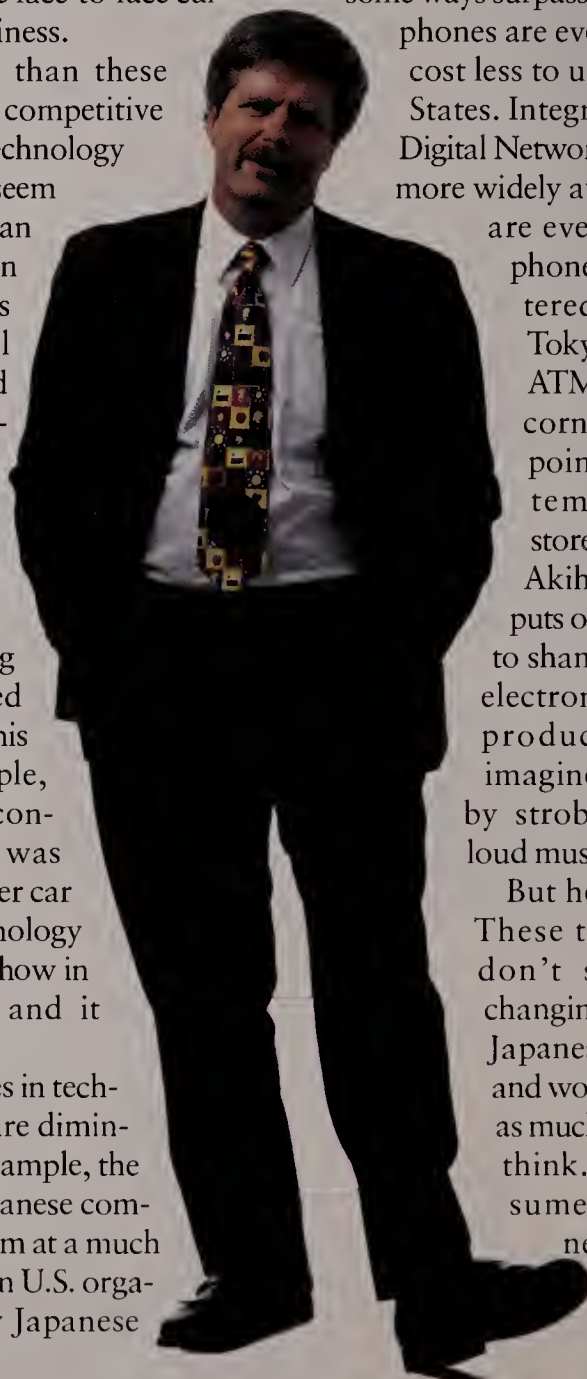


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The logo for Hyperion software. It features a stylized blue arc on the left side, followed by the word "Hyperion" in a large, serif font, and the word "software" in a smaller, lowercase sans-serif font below it.

Think Tank

aren't being used. Hardly anyone works at home or uses a laptop in a phone booth. Most ATMs, believe it or not, are closed after 7 p.m.! Few people use computers on airplanes or on the marvelous *shinkansen* (bullet trains).

At work, the new technology push also hasn't changed things much. Desktop PCs are often not on desks but in separate computer rooms. Laptops are purchased not to enable virtual offices and portable communications but because desk space (and every other kind of space) is limited in Japan. E-mail is not commonly used in Japanese businesses; the face-to-face meeting, often extending into after-work gatherings, is still the preferred means of interacting with colleagues. When I suggested to a small group of managers that they could go home earlier if they exchanged ideas electronically, they laughed and said that neither they nor their wives necessarily wanted earlier homecomings.

I met an American who was working on a laptop at a seminar in Tokyo. He said

he worked for the Japanese subsidiary of a U.S.-based IT vendor, but most of the managers of the subsidiary were native Japanese. He had just gotten his laptop, which was made by the vendor he worked for, and he was among the first in the Tokyo office to get one. His boss had resisted authorizing the purchase of the machine. When asked why, the boss explained that he was concerned co-workers might think the laptop was given to the American so he could work at home. He had to promise to be in the office as much as before. Of course, some American bosses initially resisted remote work too, but it caught on quickly anyway. Even given the long commutes of most salarymen, I get the feeling that virtual offices will be about as common as cheap real estate in Japan's near future.

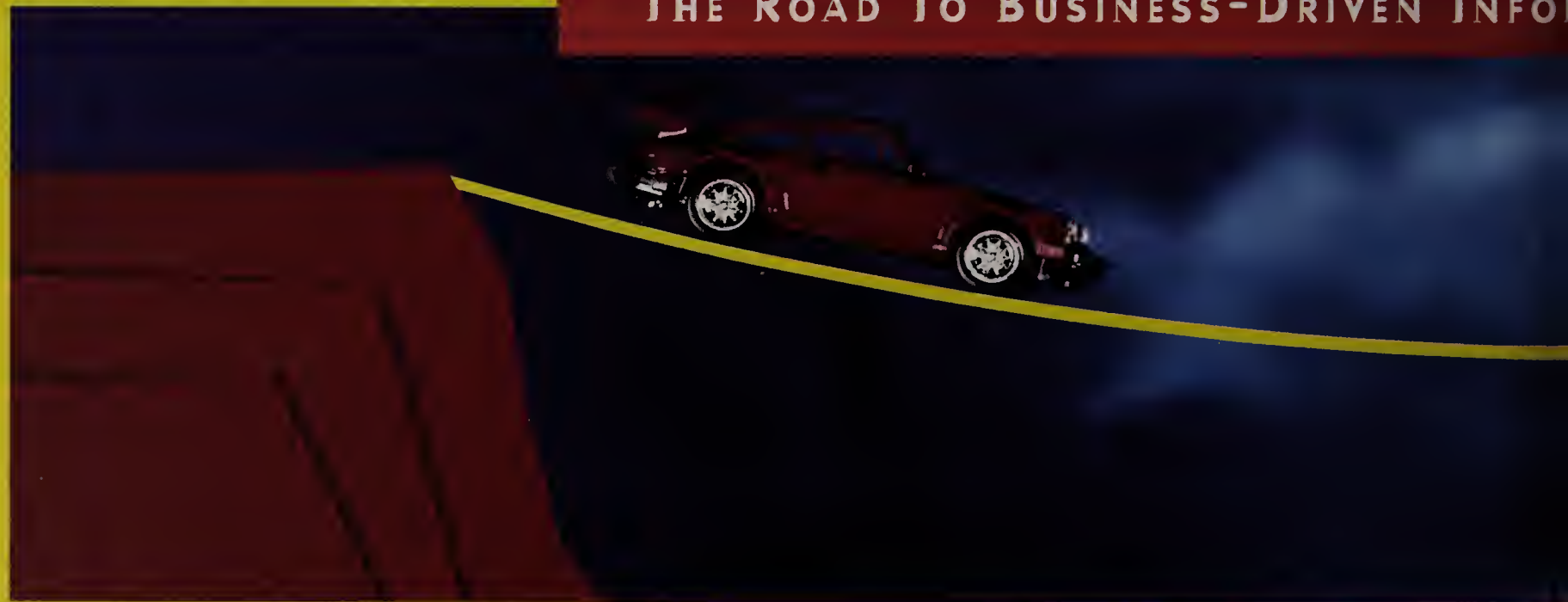
I also observed the inability of technology to change culture in a Japanese company that was trying to implement knowledge management. The CEO of one of the country's largest companies ordered the

IT director to build an infrastructure for communication and knowledge sharing. (Apparently such an initiative would rarely come from IS folks in Japanese organizations; they lack status and access to their companies' strategic directions.) Lotus Notes was selected as the right tool, and a team of consultants and internal analysts began to install it.

The Notes implementation team is building infrastructure rather than specific applications for information and knowledge management. Team members are not sure what applications will be appropriate for the company's culture and structure. To specify such uses of the infrastructure would be beyond their mandate. They believe that the CEO would like Notes to lead to a culture of information and knowledge sharing, but managing that transition is not part of their job—or anyone else's, it seems.

The team sees many cultural barriers to effective information and knowledge sharing at the company. "We don't have

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an output culture," said one team member. "Our know-how is hidden in people. The motivation to share is very difficult." Another team member noted that information is less valuable if widely shared. "Much of our information is secret," he said. A third team member commented, "When we share information, it is after work over drinks and dinner. We would like for Notes to take over some of those functions, since we are a global company and everyone cannot meet face to face. But it will be difficult." Using technology to share knowledge isn't easy even in relatively open, informal and nonhierarchical firms in the United States. That it will be "difficult" in a culture like Japan's is an understatement.

In my experience, Japanese companies have a great appreciation for knowledge (*chishiki*) and information (*joho*), but not for using IT to create and share it. They are particularly oriented to tacit knowledge—knowledge that is not structured on computers or paper, or even articulated

Japanese companies have a great appreciation for knowledge and information, but not for using IT to create and share it.

ed—as the Japanese knowledge expert Ikujiro Nonaka has long argued. A tacit knowledge orientation is well suited to businesses that are concentrated in one geographical area but is less appropriate for global organizations. Perhaps this is why Japanese companies with subsidiaries in the United States often put Japanese managers in charge, and why U.S. subsidiaries granted a high level of autonomy often run afoul of their superiors (as happened with the movie studio businesses of Sony and Matsushita).

Fine, but what does all this mean for someone living in Toledo or Orlando rather than Tokyo or Osaka?

First, don't imagine that putting in a new technology will change the culture

(whether corporate or societal) by itself. Creating a culture is difficult even when you make active efforts to manage the change and impossible when you don't.

If you've got a global business, pay attention to the presence of information cultures different from your own. Don't even think about installing a system that runs counter to the local culture unless you have lots of time, resources and senior management commitment.

Finally—and this is perhaps the most controversial lesson from Japan—maybe you should consider competing on the basis of using less (and cheaper) IT than any of your rivals. That strategy, along with heavy doses of quality, hard work, persistence and intelligence, has worked pretty well for our friends in the East. **CIO**

Thomas H. Davenport is a professor and director of the Information Management Program at the University of Texas at Austin. He welcomes reader comments at Tdav@notes.bus.utexas.edu.

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The Integration Backlash

PART 1

LINKING SYSTEMS

Sounding the Alarm

If you pine for (and work toward) tightly integrated systems that produce a companywide data flow, be careful. You might get just what you asked for—and a slew of unanticipated headaches to boot.

BY CHRISTOPHER KOCH

Clint Petty doesn't make a very convincing alarmist. Petty, who is president of DCMS Inc., a Reston, Va.-based consulting group, has a leisurely North Carolina drawl that just isn't designed to convey a sense of urgency. Yet he is adamant—and ultimately persuasive—when he says IS is facing impending disaster. Petty's fear is that companies are going to suffer from having too much of a good thing. Good information, once a scarce luxury to all but the bigwigs, is now available to anyone who can click a mouse. Great for the business, yes. But bad for IS. Systems and applications that were built for individual departments are now being linked to provide this addictive access to useful information.

Unfortunately, there's only one characteristic common to all the different chunks of systems of software logic being hooked together: None of them have been designed to talk to each other. So IS departments are forced to write software programs that act as primitive conversation

The Integration Backlash

In this issue:

Linked applications allow your company share critical information across divisions and systems. But what happens when you need to upgrade? How can you balance the need to integrate with the need to respond flexibly to business needs? A look at the perils of integration.

In our next issue:

An approach to infrastructure called message brokering may hold some answers for companies trying to make the most of their legacy systems and avoid the messy links of integration. CIO reports on the benefits and difficulties of this architecture and talks to early adopters.

starters. Those links are usually cobbled together ad hoc in response to the needs of the moment—the chewing gum and bailing wire approach to systems architecture. Information gets where it needs to go, but it's connected with a tangled web of customized connections that must be torn apart and rebuilt each time the system is changed. As the business pushes IS to integrate more and more systems and information, IS is unable to respond quickly and spends an increasing amount of time customizing and maintaining the system.

That is where Petty begins to feel a rush of existential dread. "If you don't have a coherent strategy for managing [these] data flows," he warns, "you will drown." The water continues to rise as business users get a taste of real-time access to quality information, and they want more—more applications, more systems and more information. "Having all this connectivity is dangerous," says Petty, who helps companies untangle systems.

IS won't be the only ones taking a bath on this one, however. Now that IT is inextricably linked to the core processes of the business, systems gridlock means business gridlock. Slow systems changes mean slow product introductions and longer lead times for getting a worldwide view of inventory to everyone's screen.

The pace of change in the business is simply becoming too fast to rely on traditional means of integrating systems, says Texas Instruments CIO Jodie Ray. TI's mainframe system, though highly efficient and integrated, is built with layer upon layer of custom interfaces dating back almost 20 years.

Ray realized things were getting out of hand last year when TI's semiconductor division wanted its various locations to review inventories in real-time. The necessary changes in the mainframe system took nine months to complete.

The problem wasn't the system itself, says Ray, it was the nature of the software links that bound it all together. "The interfaces are very complex and interwoven," he says. "If we had had more loosely coupled systems, we could have made that change in three weeks."

Yet slow systems changes are merely a symptom of a much larger problem. "The very things that made our systems good in the first place are now becoming frustrations," says Ray, who is in the

process of moving TI to a new client/server-based system. "[Our mainframe systems] were designed for a very stable business environment

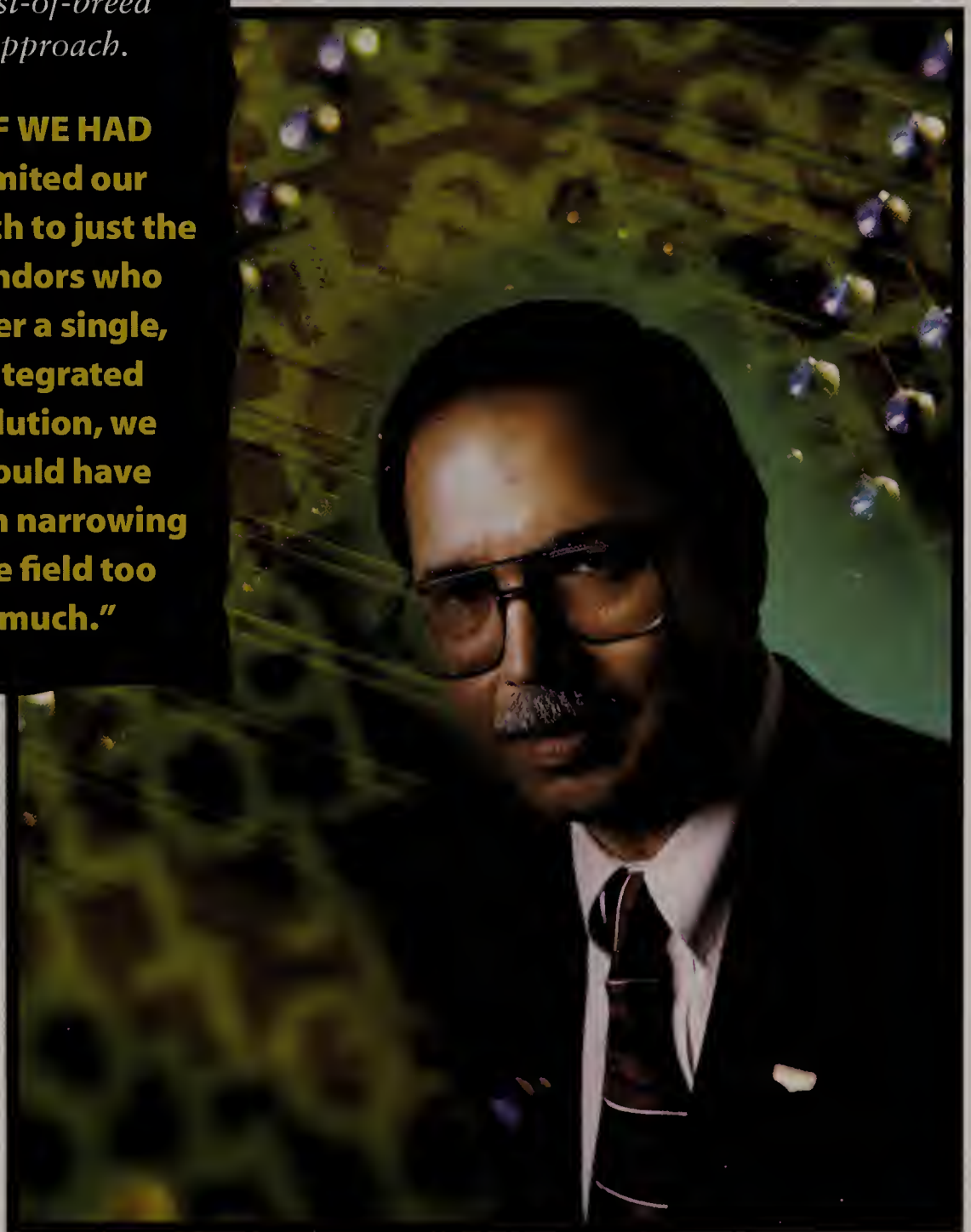
and were highly tuned to that environment, which makes them difficult to change."

Maintaining a tightly integrated information flow across TI meant sacrificing two goals that have become extremely important in the age of integrated information: speed and flexibility. "It used to be that the efficiency of transactions was all that mattered," says Ray. "Now, the capability to change quickly is more precious than money—it's more important than having the lowest transaction cost."

That demand is throwing a harsh light on what Roy Schulte, Gartner Group Inc.'s vice president for software management strategies, calls "interapplication spaghetti." "Organizations are stuck in a quagmire of incompatible architectures and hard-to-maintain but harder-

*Carlos Cabrera,
director of
corporate MIS for
Sun Chemical,
subscribes to the
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approach.*

**"IF WE HAD
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The Integration Backlash

PART 1 LINKING SYSTEMS

to-eliminate legacy applications," Schulte writes in a recent Gartner Group paper. "The crux of the problem is that application systems are built at different times by various internal and external development groups operating independently of each other, without knowledge of the others' choice of tools or designs." Gartner Group estimates that 35 to 40 percent of IT departments' programming efforts are devoted to reconciling duplicate data contained in various databases around the company—the computing equivalent of disassembling a car to change the oil.

These pit stops can become so costly and time-consuming that many companies simply stop making them—which ends up being just as costly and time-consuming, according to Paul McGuire, a consultant for Unisys Corp. in Blue Bell, Pa. "I recently watched a data entry clerk at an insurance company take two hours to input a customer record," says McGuire. "What had happened was that the process had changed but the application hadn't; she had to page back and forth through 12 different screens to enter the data."

Given the cantankerous nature of these creaky old systems jalopies, many CIOs have decided to junk them for a sleek new production model called ERP (enterprise resource planning) software. The lure of these systems is that they create a single computing standard across the company, ostensibly eliminating the need for patch integration. Vendors like SAP AG and Baan Co. have created "pre-integrated" suites of applications that mirror a company's major business processes, including manufacturing, financials ordering, shipping and billing. There's usually no need to dive into multiple systems for the same information and no need to mess with the software wiring that hooks it all together.

Yet, as those who are trying to implement ERP packages can attest, sweeping

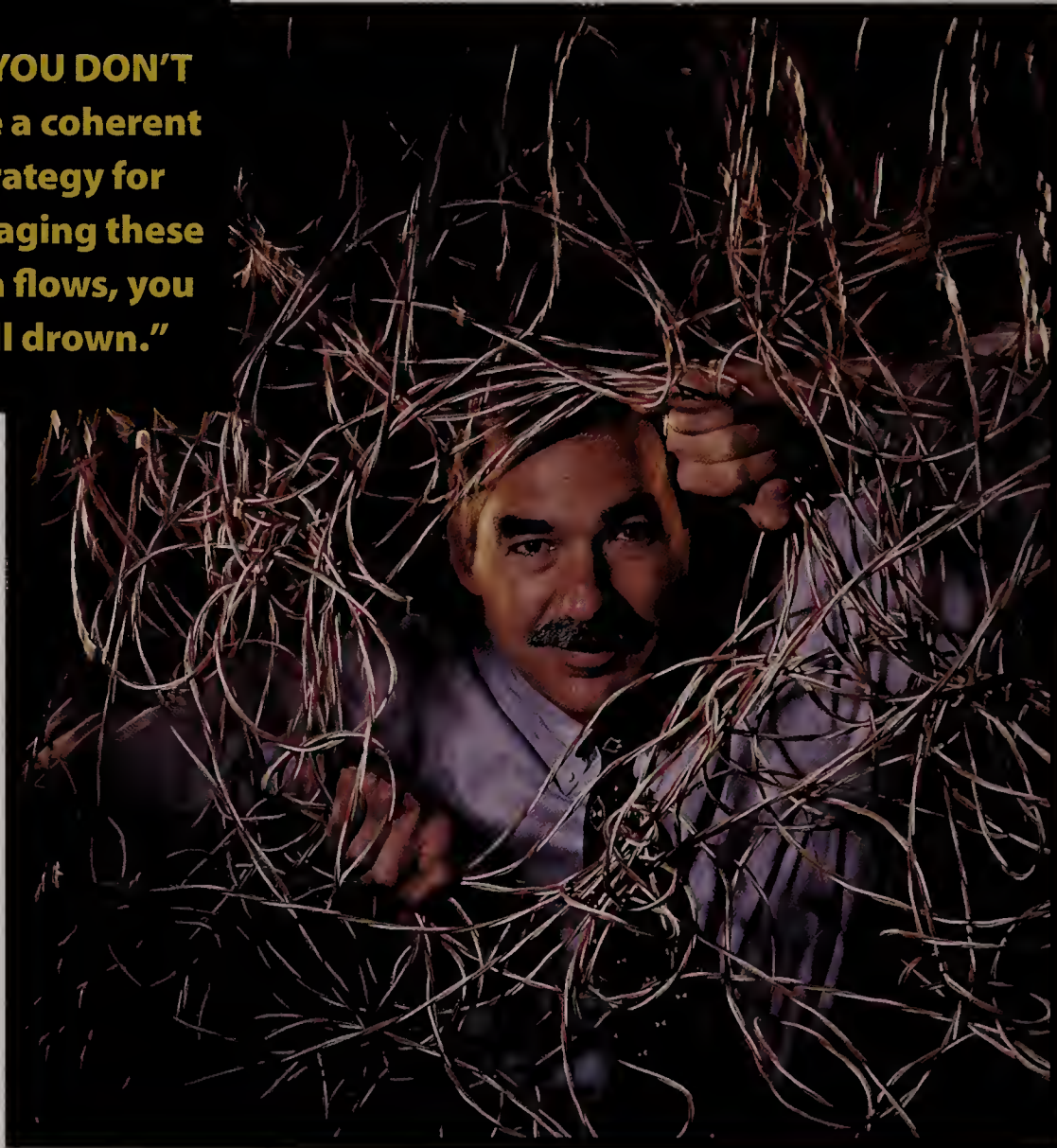
away the cobwebs isn't as easy as it sounds. The media is full of reports of ERP-based reengineering efforts that drag on for three years or more and cost tens of millions of dollars. The problem isn't the software—although most of these packages are as complex as the businesses they try to mirror—it's that most companies can't find a package that will do it all. "The integrated software packages have been oversold in terms of their reach," says Vinnie Mirchandani,

distinct components. SAP is also showing more interest in cooperating with other vendors to create standard interfaces that will hook their software chunks together.

Software vendors are realizing that they must provide customers with better options on the integration front or risk losing business. That trend toward "application openness" mirrors the evolution that occurred in mainframe computing, when companies began rebelling against the domination of all-powerful IBM in the 1970s and '80s, says Paul Margolis, chairman of the board of Marcam Corp. in Newton, Mass., which specializes in software for manu-

*Clint Petty
has become the
Cassandra of
integration: Pay
attention before
it's too late.*

**"IF YOU DON'T
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research director for Gartner Group. "For most large companies, there isn't one vendor that can provide all the functionality you need."

Fissures have already opened in the one-ERP-fits-all concept. SAP, for example, recently announced that it was splitting its successful R/3 ERP package into

manufacturing companies. "Large companies' CIOs have developed a hangover from trying to move to a single vendor for all their apps," Margolis says. "Now they're sensitized to looking at multiple sources of supply, and that opens the market for all these best-of-breed companies to bring their solutions forward."



Jodie Ray, Texas Instruments' CIO, feels stymied by the inflexibility tight integration has brought.

"THE VERY things that made our systems good in the first place are now becoming frustrations."

They'll have the biggest success where they can provide the best piece of a solution and integrate it with the suppliers of the broader solution," he says.

Companies choosing the best-of-breed approach are sticking by this strategy for software selection: full speed ahead with the best functionality available today and damn the integration torpedoes. For Carlos R. Cabrera, director of corporate MIS for Sun Chemical Corp. in Fort Lee, N.J., combining multiple software packages appeared to

be the best solution when he decided to replace Sun Chemical's mainframe systems last year. "If we had limited our search to just the vendors who offer a single, integrated solution, we would have been narrowing the field too much," he says. "There isn't one package that can accommodate all the needs of process [chemical] manufacturing."

Cabrera eventually chose two different packages: Protean, from manufac-

turing software specialist Marcam, to handle Sun's chemical-making processes across its five major divisions in the United States and Europe, and a financial software package from

Coda Software. In making his choices, Cabrera obviously considered the functionality of each package, but that wasn't the only deciding factor. There was a certain amount of political moxie mixed in, too.

Cabrera has seen other companies



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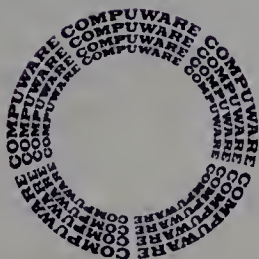
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John Stevenson's approach is to pressure vendors into being compatible with SAP.

"WHEN I BUY A package, I'm expecting a pretty rigorous hook into SAP.

There are enough of us in the marketplace to put that pressure on the vendors."

struggle through delays and cost overruns while implementing their ERP systems. He understands that people-issues cause more delays than integration does. Like many of its competitors in the chemical industry, Sun has been buying up independent companies in Europe with the intention of integrating their manufacturing processes into the Sun model. Especially in Europe, where nationalism still runs rampant, these companies are accustomed to operating as individual, locally focused entities, and their ways of going to market differ dramatically. Cabrera saw that the organizational costs and endless negotiations involved in getting these separate entities to agree on a single standard easily could outstrip the cost of the hardware and software. "I knew it was going to be difficult for them to accept a single solution, especially one imposed on them from the United States," he says. "We decided we had a better shot at integrating at the ERP level because the

manufacturing processes among equivalent business units in the U.S. and Europe are pretty similar."

To gain support across the company for an integrated manufacturing solution, Cabrera gave each European location the freedom to monitor its own financial transactions as it wishes within an overall chart of accounts written by corporate. Choosing Coda was another nod to transatlantic harmony. Coda, a British company, will be more attuned to European issues and financial regulations than a U.S. software provider, Cabrera reasons.

To make data move between Coda and Marcam, Cabrera is relying on a time-honored negotiating tool—leverage. "By the time we need to get the integration issues worked out, we will still owe these companies money," he says.

"They will have a significant financial interest in getting things worked out."

Software vendors are feeling the heat from customers like Cabrera, who no longer want to accept the burden of integration. "The software selection stage is when a customer has the most leverage," says Ian Findley, director of applied technology at Marcam. "If I were a CIO, I would make vendors submit an RFP that includes not just the cost of installation but the cost of integration. It may not change the final cost, but it will put the vendors on notice that they have to do something about it."

So far, vendors mostly have noticed that they can avoid the issue by ignoring the root of the problem—a lack of standard interfaces between their products—and focus instead on solving each customer's specific integration needs. There are hidden costs to this "solution": Vendors could be spending less time writing interfaces (and building that cost into their products) and customers could be spending less for consultants and internal staff to hook these pieces together. In the end, customers will wind up paying for all that personalized attention, whether they realize it or not.

To their credit, the major ERP software vendors have established a consortium, the Open Applications Group Inc. (OAG), to create open interface standards so that all the member companies' products can talk to one another. Progress has been slow, but the first OAG standard was published this year and Marcam and Coda have agreed to use it to write the interfaces between their systems at Sun Chemical. "If there isn't a standard interface, then we have to build

an individual piece of software for each vendor we link to and change that software every time the other vendor changes its software," says Marcam's Margolis, who is chairman of the OAG.

Yet while the OAG's goals are noble, few observers believe that it can overcome the competitive pressures of the marketplace. "The presence of the OAG is important, and the fact that they codify things is important, but they won't be able to set standards—standards are set by success in the marketplace," says Bobby Cameron, senior analyst in Forrester Research Inc.'s packaged applications strategies service.

The marketplace likes the idea of a complete solution, which explains why the big vendors have little real economic incentive to work together on open standards, Cameron adds. Indeed, Marcam is succumbing to the pressure to join the ranks of complete-solution vendors. Though its expertise is in manufacturing, it will soon offer a financials package linked to Protean with some of the OAG's standards and some of its own. "There will always be some things a vendor can do better when it supplies both sides of the solution," acknowledges Margolis. "People will always be attracted to a one-vendor solution if there's no advantage to having two."

Even in instances where a single vendor can't do it all, there can be advantages to letting a single vendor do *most* of it. John Stevenson, vice president of information technologies for Lennox International Inc., a Richardson, Texas-based manufacturer, knew SAP's R/3 package would solve most, though not all, of his problems. So when he set out to revamp Lennox's aging mainframe systems in 1993, he decided to use SAP's power in the marketplace to his advantage. "We are constantly putting pressure on the specialty vendors to integrate with SAP," he says. "I can't afford to do custom links anymore. So when I buy a package, I'm expecting a pretty rigorous hook into SAP or I won't consider it. I think there are enough of us in the marketplace to be able to effectively put that pressure on the vendors."

Stevenson admits to having his share of integration nightmares when he thinks

about the future, however. He's worried that if his systems become too loosely coupled, he'll begin to have the same layers of complexity—and extra work for his staff—that plagued his mainframe systems. "We'll have to smack [SAP] a little bit now and then to make sure it doesn't bring manual processing back into the enterprise," he jokes.

When Stevenson uses the word "we," he's not just talking about Lennox, he's talking about a Who's Who of the Fortune 100. Trouble is, these companies, powerful though they may be, are a varied lot. They feel the most pressure on their systems at the industry level,

where the processes get much more specific and the ROI for software vendors like SAP begins to dwindle. To get the software they need, many industries are banding together to present a united front to vendors.

Sematech, the 10-year-old consortium of U.S. semiconductor manufacturers and the U.S. Defense Department, is focusing part of its energies on developing industrywide standards for basic processes such as materials tracking and order entry. Those are areas where everyone agrees that the potential for competitive advantage is about nil. "EDI is not a competitive advantage," deadpans Phil Coup, vice

Three Ways to Skin This Cat

1

SOLUTION ASSEMBLER. Select a single vendor to assemble an integrated software system using its own products and those from other vendors.

Advantages: Minimizes chances of poor fit between software packages; customers have plenty of leverage over the solution vendor.

Disadvantages: Software may be chosen based on contractual relationships between vendors and expediency rather than on the best functionality for the job.

Plan of attack: Watch your solution assembler like a hawk.

2

GENERAL CONTRACTOR. Hire a consulting firm to find the best software packages and integrate them.

Advantages: Consultants don't have a vested interest in a particular software; they also may be able to take charge of the solution on an outsourcing basis when it's finished.

Disadvantages: More chances for software incompatibilities and implementation delays.

Plan of attack: Make the consulting firm financially accountable for finishing on time with a solution that works.

3

POWER VENDOR. Buy a big chunk of the solution from a vendor with marketplace clout and fill in around the edges.

Advantages: Small vendors need to make their software work with the big packages; big vendors have more resources for R&D; consulting firms have invested millions in training consultants to install the big packages.

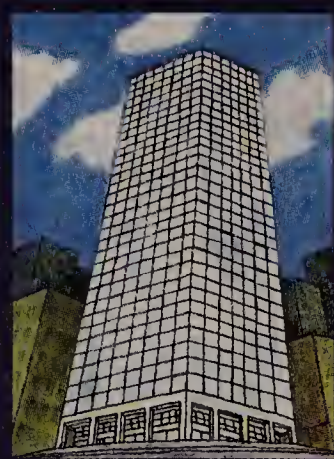
Disadvantages: Heavy reliance upon a single vendor; organizational costs of bringing organization to a single standard.

Plan of attack: Have an exit strategy.

SOURCE: JIM SHEPHERD, VICE PRESIDENT OF RESEARCH, ADVANCED MANUFACTURING RESEARCH INC., BOSTON



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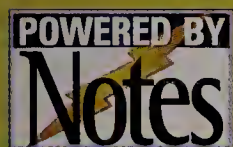
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The Integration Backlash

PART 1 LINKING SYSTEMS

president and CIO of Texas Instruments' semiconductor group. "It's better for us to get together as a group and develop a framework for vendors to build to than to have every semiconductor company write its own customized interfaces," he says.

Sometimes consortia bring in consultants to act as go-betweens with the vendors. In the oil industry, for example, a number of large companies that use or plan to use SAP's R/3 package have hired Andersen Consulting to research their common needs and coordinate with SAP to create the process code and interfaces they will share.

These companies are on the right track, but the formation of industry con-

**"IT'S BETTER
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write its own
interface."**

—Phil Coup

sortia doesn't do much to change the tone of Clint Petty's alarmist twang. "People are still looking at piecemeal solutions to what is going to become a very big problem," he says.

What may seem like a cohesive, integrated solution now may look like a tangled mess a few years hence, as the need for communication and integration between systems grows. Companies are still focusing too much on quelling interapplication chaos rather than planning for it. Furthermore, the promise of truly standardized interfaces among all these systems is a pipe dream, just as it was in the mainframe era. To cope with the continuing chaos, companies must view

integration as an independent discipline within the IS department. "We're going to have people whose job is solely to manage the flow of data from application to application," says Petty.

The question is, how can these integration specialists plan their strategies so that they avoid a steady diet of interapplication spaghetti? What can they do to make systems less perishable? To understand how integration SWAT teams are forestalling disaster in some forward-thinking IT organizations, read "A Smarter Linking Logic" in the Dec. 1 issue of CIO. **CIO**

Senior Writer Christopher Koch can be reached at ckoch@cio.com.

The Integration Backlash

Part 2 & Part 3

Learn more about the solution some companies have embraced in our December 1 issue.

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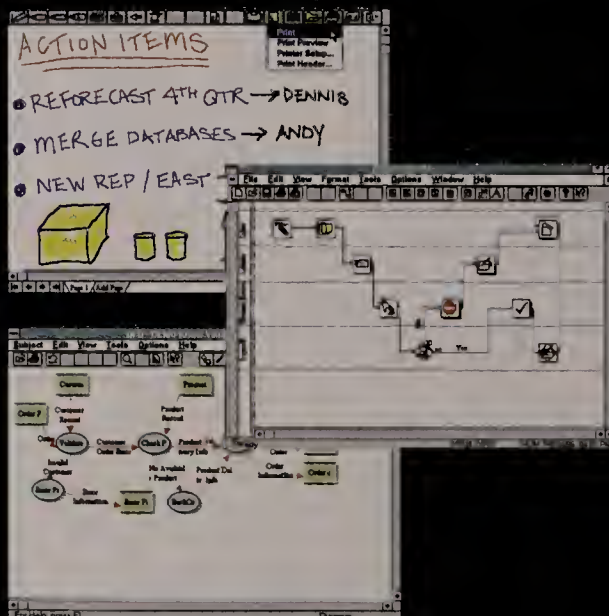
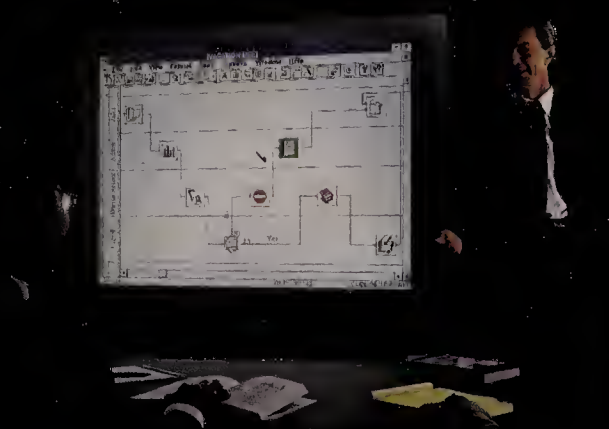
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Drop On In



CIO COMMUNICATIONS, INC.

FRUITS *of their* LABORS

Fruit of the Loom is investing more than \$4 million to develop an online distribution channel that includes products from its competitors. And it's letting them in for free, leaving some to wonder if Fruit has gone bananas.

BY LYNDA RADOSEVICH

STROLL DOWN MAIN STREET, USA on any Saturday afternoon, and you're sure to see many people dressed like walking billboards.

In fact, spotting someone in a crowd who isn't sporting a T-shirt or sweatshirt emblazoned with the logo of a university, sports team, rock group or athletic gear company is nearly impossible these days.

At Fruit of the Loom, the Bowling Green, Ky., manufacturer best known for its underwear (and the guys in goofy fruit suits who promote it),

Reader ROI

MANY PUNDITS PREDICTED Web commerce would replace the middleman. But Fruit of the Loom chose to use the Web to *help* the middleman. Learn Fruit of the Loom's strategy and implementation plan for becoming a "channel master" by sponsoring business-to-business Web commerce sites.

PHOTOS BY ERICA FREUDENSTEIN



FRUIT BUNCH:

Above, clockwise from left, Paul Cimino, Todd Turkin, Charles Kirk and David Dickson worked together to make Fruit of the Loom's Activewear Online project a fruitful endeavor.



those imprinted shirts represent a crucial portion of its total business—roughly half of the \$2.4 billion company's operating profits. The Activewear division manufactures blank shirts and sells them to distributors, who in turn sell them to screen-printers and embroiderers, who decorate the items and sell them to retailers, who peddle to consumers. In other words, Fruit of the Loom is the first link in the distribution chain that ends with the Smashing Pumpkins T-shirt your teenager bought at a recent concert.

Unlike the knickers business, in which Fruit sells products directly to large retailers such as Wal-Mart, the Activewear division relies on distributors to

reach the next link in the channel, which comprises thousands of small to midsize garment decorators. (The distribution tactics are different because T-shirts require an intermediary step—decorating—and the decorators are too numerous and their needs too varied for Fruit to supply them directly.) Often Fruit's distributors carry other products, such as hats and bags, as well as T-shirts from Fruit's

competitors, including Hanes Printables (a division of Sara Lee Knit Products) and Russell Corp. Meanwhile, the imprinted sportswear market is consolidating, so Fruit's relationships with key distributors are becoming more and more crucial and competitive.

Executives at Fruit of the Loom recognize that the Activewear business is only as strong as the weakest links in the distribution chain—and the company is betting that Web-based electronic commerce will help strengthen those links with distributors. Led by David Dickson, vice president of marketing, and CIO Charles Kirk, Fruit of the Loom is developing and maintaining individual Web commerce sites for each of its key distributors. Each site displays the distributor's unique Web address and allows customers to browse through the distributor's colorful catalogs, inspect inventory levels, check their credit limits and place bulk orders online. Fruit is calling the overall Web development project Activewear Online.

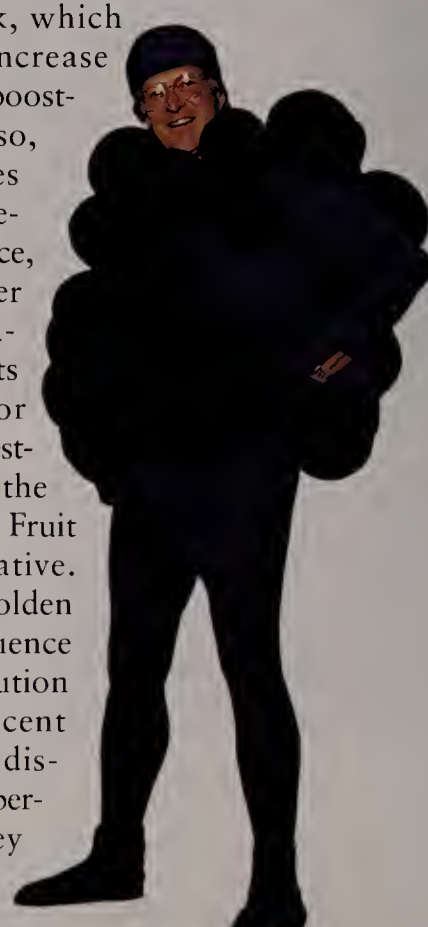
However, electronic commerce sites on the Web are notorious for being the most expensive and difficult to build and maintain. The primary cost is incurred in custom-coding links to back-office sys-

tems (see "Good 'N' Plenty," Page 59), and Fruit's distributors have different back-office systems. Furthermore, no one knows for certain how popular online ordering might become. Nonetheless, Fruit of the Loom is providing the Web sites free to its distributors. And it is spending more than \$4 million to offer that privilege. To top it off, the sites feature not only Fruit Activewear but also products from Hanes and Russell.

At first glance, the strategy seems to be one apple short of a bushel. Why would a manufacturer spend millions of dollars and devote valuable executive resources to build sites for distributors who also sell competitors' products?

The answer has to do with a progressive strategy that consultants at Stamford, Conn.-based Gartner Group Inc. dub "channel mastering." A channel master is a powerful member of a distribution chain that commits itself to supporting a system that benefits all channel members. American Airlines Inc.'s Sabre Group, for example, allows agents to book flights on most airlines, and Baxter Healthcare Corp.'s ValueLink manages a similar hospital supplies distribution. Channel masters benefit from increased efficiency in the overall channel and from the goodwill the system elicits. "That's at the root of what Fruit of the Loom is doing," says Art Mesher, research director for integrated logistics at Gartner Group.

Fruit of the Loom is one of the first companies to attempt channel mastering using the Web. In doing so, Fruit hopes to gain favor with the largest distributors, many of whom don't have the time or money to build their own Web sites. The sites will allow the distributors to accept orders 24 hours a day, 7 days a week, which Fruit hopes will increase total sales, in turn boosting Fruit's sales. Also, the system includes algorithms that benefit Fruit. If, for instance, a silk-screen printer needs 10,000 extra-large black T-shirts and the distributor doesn't have the requested brand in stock, the system will suggest a Fruit of the Loom alternative. Fruit sees this as a golden opportunity to influence an emerging distribution channel in its nascent stage because once distributors have one operational Web site, they won't need another. "We're staking out



Toolbox

Fruit of the Loom's Activewear Online uses a cornucopia of technology that includes:

Hosting Service: Connect Inc.

Server Hardware: Sun Enterprise 4000 server

Server and Application Software: Connect OneServer

Relational Database: Oracle7

Phone Lines: T3 and incoming dial-up connections mainly at 28.8Kbps



real estate that won't be on offer a year or two from now," Kirk says.

The value of that property is still unknown, however. Although Fruit's research found that more than 30 percent of the screen printers and embroiderers have access to the Internet, no one knows how many of them might use it for gathering information and ordering.

Furthermore, Hanes Printables is not so easily pushed into the second-banana slot. When Hanes learned of Fruit's strategy, it raced to develop and promote its own Web system for distributors.

"We feel that business-to-business use of the Internet is an area of great potential," says Tom Cash, CIO of Sara Lee Knit Products. "The ones that have experience and relationships established with the distributors will be the ones that win that race in the long run. Therefore, it is as important to us as it is Fruit to be in the forefront on this." He will not disclose how many distributors Hanes has enlisted.

Cash adds that Hanes was first to launch a corporate Web site that lets garment decorators locate products and distributors. But even he concedes that Fruit is one of the first to sponsor Web sites for distributors. Although Cash characterizes Hanes as being ahead in prior uses of technology, "this time, it's a competition," he says.

FOR COMPANIES INTERESTED in becoming channel masters, Fruit's somewhat unorthodox tactics provide valuable insights.

For instance, many pundits predicted that Web commerce would eliminate the middleman. But the channel has too many small screen printers and embroiderers for Fruit to service them directly. So instead of ridding itself of the middleman, Fruit is actually using the Web to *help* distributors—and itself.

Also, Fruit ducked the usual return-on-investment studies before committing to the project in February. The reason: The sponsorship benefits don't generate the kind of payback an accountant can calculate on a spreadsheet. "To be honest, anything you did on ROI would have been bogus," says David Dickson, vice president of marketing for Activewear.

And once Fruit's idea germinated, it ripened quickly. In less than six months, the company and its partners got a system underway.

The story began in late September 1995, with a phone call between Dudley McIlhenny, a partner with the New York consulting firm The Context Group, who had worked with Fruit of the Loom for 15 years, and Paul Cimino, CEO of Snickelways Interactive, a digital marketing firm in New York. Cimino had built a Web trade site in which buyers and suppliers in the gemstone industry could meet and place orders for semiprecious stones online. The site is sponsored by one of the wholesalers. He asked McIlhenny if the concept could apply to the imprinted sportswear industry.

McIlhenny was intrigued by the idea.

Five days later, a Saturday, McIlhenny caught the

Good 'N' Plenty

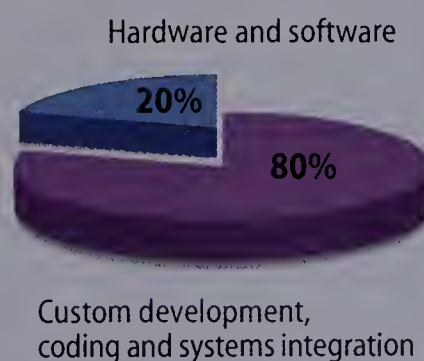
Electronic commerce sites are typically the most costly Web sites to create

IN A STUDY OF 20 LEADING WEB commerce pioneers, International Data Corp. (which is owned by the same parent company as CIO) found the most expensive type of Web site to produce is an electronic commerce site, which averages \$1 million. Other findings include:

- The cost of building a commerce-ready Web site ranges from \$300,000 for a minimally secure site to \$1.5 million, not including marketing, advertising or training costs.
- Software costs range from \$10,000 for those who use off-the-shelf packages to more than \$500,000 for sites primarily based on custom code.

- Most of the money goes to custom coding. Of the total spent, roughly 20 percent is for hardware and software. The remaining 80 per-

cent is for custom development, coding and systems integration efforts, which underscores the lack of off-the-shelf products available.



- Web site staffing among the companies surveyed ranged from a few to 40, with an average of 19 people.
- Estimates of maintenance costs are unreliable because the sites are too new.

—L. Radosevich

END STALK



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notoriously difficult-to-reach Dickson at home. Dickson thought the sponsorship idea was just peachy. Using money from his marketing budget, he hired Cimino to mock up a prototype.

In November, Dickson approached Todd Turkin, executive vice president of Broder Bros. Co., a \$200 million sportswear distributor in Plymouth, Mich., and made a Web sponsorship offer. Turkin and Dickson were longtime acquaintances, and Broder Bros. is Fruit's largest distributor, so Turkin was all ears. At the time, Broder's customers were placing orders over the phone during normal business hours and waiting while a service representative checked inventories and collected order informa-

"In our wildest imaginations, we would not have guessed that this project would cost as much as it has."

—David Dickson

tion. The Web site, Dickson told Turkin, could reduce transaction costs by letting customers browse through the catalog, check inventory and place orders on their own at any hour of the day, thereby reducing personnel costs—all on Fruit's nickel. In return, the site would include a Fruit of the Loom banner and its substitution rules would favor Fruit products. Turkin approved the plan.

Meanwhile, CIO Kirk kept tabs on the project, which was not in IS because it was small, run out of Dickson's marketing budget and not connected to Fruit's systems. Still, Kirk was supportive. He had come to Fruit from Federal Express Corp., where he had been vice president of international systems. While there, he was involved with the development and maintenance of the company's customer automation system, which lets customers schedule pickups and track packages online. The system was revolutionary at the time, but Kirk had disagreed with the decision to allow customers to place only Federal Express orders using the system. "There's hardly a customer out there that can ship entirely and solely by Fed Ex because there's always someone who [has] something that's better to ship by truck or UPS," he had argued. So this time around, Kirk was eager to promote the more open approach that Dickson was taking with Broder Bros.

Then a project-altering event

occurred. At a February meeting of the board of directors, Kirk, who had become increasingly involved as the project grew, demonstrated the Broder Web site, complete with a full-color catalog, inventory checking, online ordering and substitution rules. The board was floored. The members sensed they had something good to offer the distributors that their competitors didn't. At the board's request, Chief Operating Officer Dick Lappin opened the checkbook and encouraged Dickson and Kirk to sign up the major distributors as quickly as possible. Lappin even made the rounds himself, helping to woo distributors. In a matter of weeks, approximately 30 distributors were on board.

By that point, the scope of the project had grown so large that Kirk took over the technical logistics. His immediate challenge was to find an affordable way to mass-produce complex, transactional Web sites that could work with a variety of back-end systems.

The trouble was, the impressive Broder site was built using hand-coded scripts. The handiwork cost well over half a million dollars to produce, according to Kirk. While that's not an outrageous sum for individual Web commerce sites, it was too high for mass production of 30 sites.

What Kirk wanted was off-the-shelf software for a real commercial order-entry system. It had to handle complex purchase orders and accommodate substitution rules that allow the company to recommend alternatives when a product is out. It had to deal with commercial credit rules and account limitations. It had to let the distributors offer specials to individual customers, so when a screen printer who designed, say, Chicago Bulls gear logged on, the system could offer a discount on red T-shirts. At the suggestion of analysts from Forrester Research Inc. in Cambridge, Mass., and Gartner Group, Kirk looked at the OneServer from Connect Inc. in Mountain View, Calif.

Connect originally was an online services company, like America Online Inc. or CompuServe Inc. In 1992 it began selling OneServer, a packaged online application built on Oracle7. The

Finding It Online

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www.broderbros.com
- **Connect Inc.** www.connectinc.com
or www.oneserver.com
- **Fruit of the Loom** www.fruit.com
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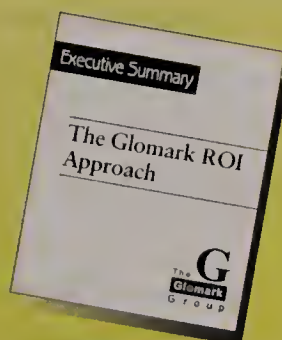
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software offers administrative services needed to handle many users: access control, security, usage tracking. It can also display a multimedia catalog and allows sellers to determine what a particular customer sees in the catalog when he or she logs on. For instance, a distributor can program the system so that a screen printer who purchases many hooded sweatshirts sees an ad for hooded sweatshirts first. Finally, it has application programming interfaces (APIs) for connecting to back-end systems.

Kirk was sold. In late March, Fruit signed a licensing contract worth an undisclosed amount. (In July, Fruit took the relationship one step further by investing \$3 million in the 140-person company in addition to the \$4 million it paid for Web site development. Connect went public in August.) For the next 90 days, 20 programmers from Connect, Fruit of the Loom and CompuWare, Fruit's systems integrator, worked on a database design. The programmers specified attributes for each product area, such as waist and inseam measurements for trousers; neck and sleeve size for shirts; and color, texture and material for all products.

Meanwhile, Snickelways Interactive was creating a program that helps distributors design their Web sites. The program walks distributors through a creation process in which they pick attributes such as background patterns from predesigned templates. That way, distributors don't have to hire their own designers to have professional-looking sites.

The team took a middleware approach to linking to distributors' different, and sometimes creaky, inventory systems. They used an API that enabled OneServer to accept a flat-file upload from distributors' systems. Once in OneServer, the flat file is partitioned into an Oracle7 database, which serves inventory and product information to the Web sites. Connect hosts the Web sites, and distributors have password access through a dial-up connection.

They can update the inventory information as often as they like, and the upload process can be automated.

For now, Connect collects incoming orders and forwards them to distributors by e-mail or fax. The distributors then enter

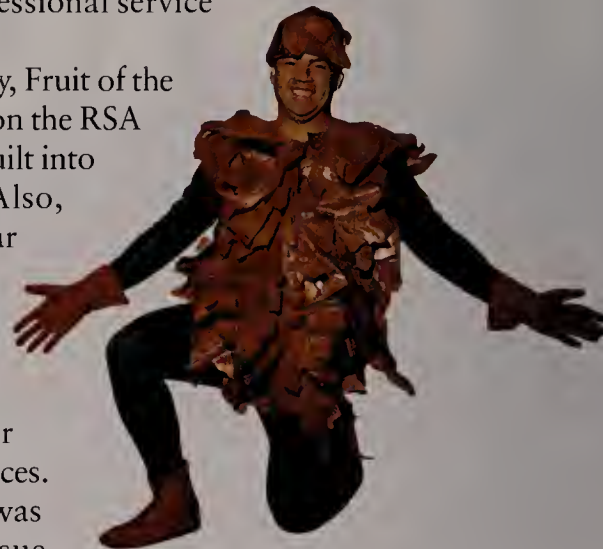
orders into their order-processing systems by hand or batch file transfer. The Activewear Online team is building programs that will automatically deposit orders into distributors' order-processing systems, but it is saving that feature for the second implementation phase later this year. Some distributors have old systems that aren't flexible enough to accept electronic transactions from out-

side systems, so they will continue to use the manual order-entry method. "We didn't want to force distributors to upgrade their back-end systems in order to participate," says Craig Norris, vice president of professional service at Connect.

For security, Fruit of the Loom relied on the RSA encryption built into OneServer. Also, the Activewear Online application used Netscape Secure Socket Layer security in places.

But security was not a big issue for Fruit's distributors because the people placing orders would already have accounts with the distributors. The customers would still establish their accounts offline, and then their IP addresses would be programmed into the Web site so that it would send information only to them, according to Kirk.

In June, the Broder site went public. Even before that was announced, roughly 1 percent of Broder's orders started coming in over the Web, Turkin says. This fall, Turkin plans a promotion with AT&T WorldNet Internet Service in which Broder Bros. will send Internet access disks to roughly 10,000 screen printers and embroiderers. When the customers sign up, the first Web page that will open will be Broder Bros. Turkin says he wouldn't be surprised if online ordering reaches 10 percent of total orders. The other distributors' sites will be up by press time.



A NUTTY HOME PAGE

Fruit of the Loom's corporate Web site is www.fruit.com. The intuitive address, www.fruitoftheloom.com, is actually a site for a group that proposes giving away inflatable homes to the homeless.

BECAUSE THIS AREA IS SO NEW, no one at Fruit really knows for sure where it's going. Already, though, it has learned a lesson: "In our wildest imaginations, we would not have guessed that it would cost as much as it has," says Dickson. The costs, he says, have to do with "creeping elegance"—as the project's team realized what was technically possible, they kept adding to the project.

Costs aside, Fruit executives' instincts told them the project was going to be juicy. "We knew it would be impossible for any of us today to truly appreciate where this could take us in the future," says McIlhenny. "But we're in, we're on the ground floor, and we have something that's state of the art." Looks like Fruit of the Loom just might have picked itself a real plum. **CIO**

Lynda Radosevich is a writer in New York. She can be reached at lradosev@interserv.com.

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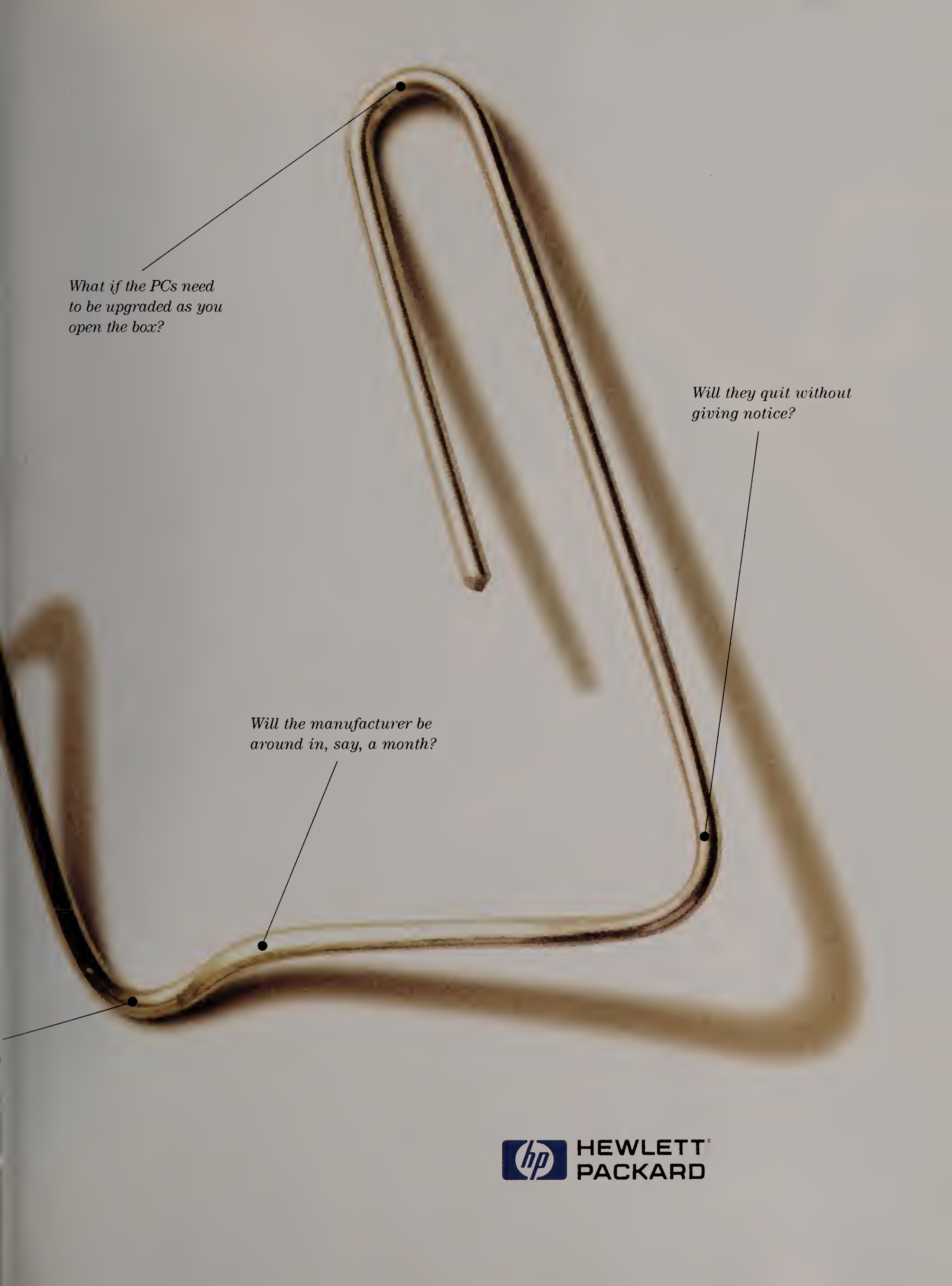


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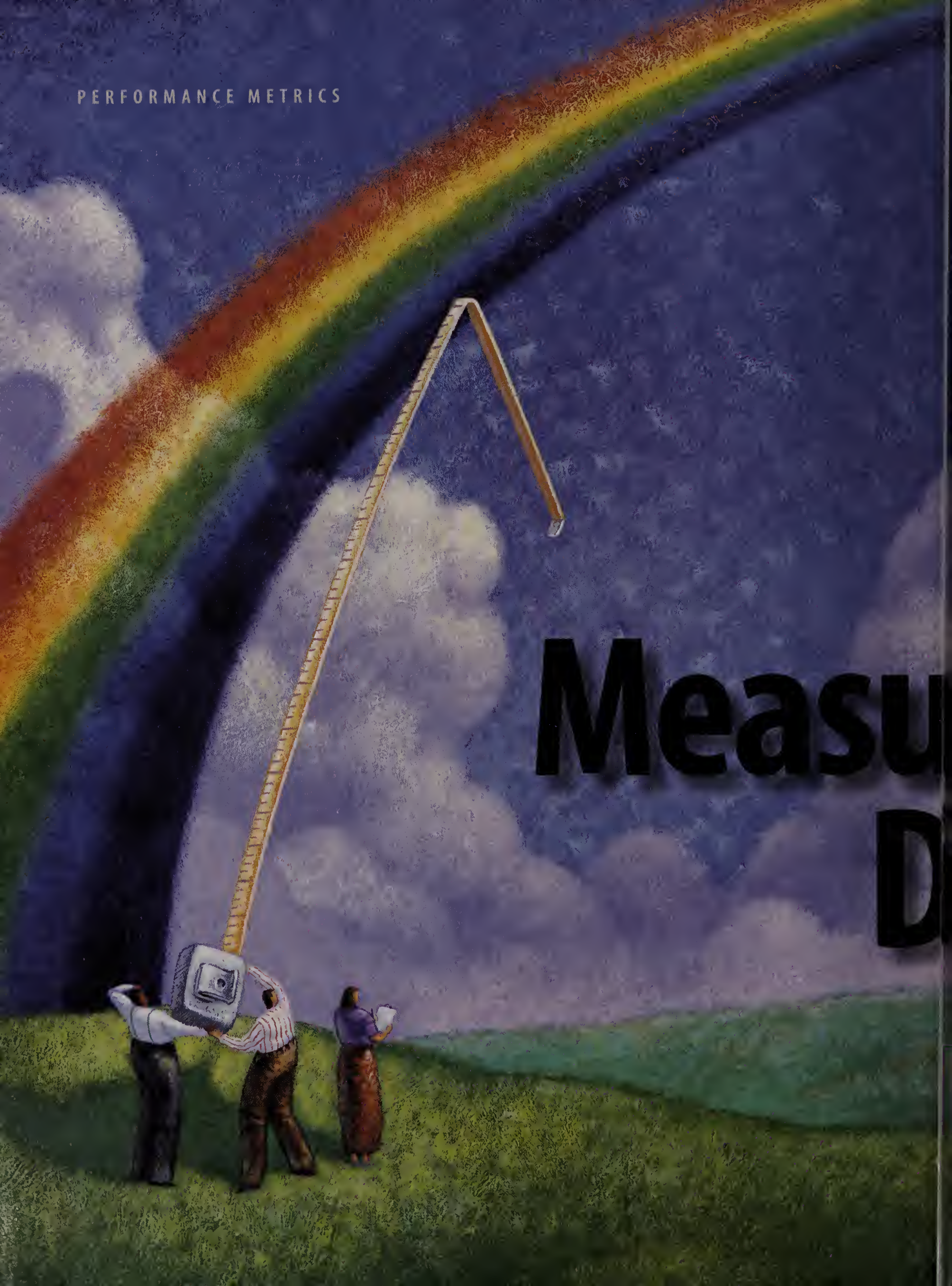
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Reader ROI

I.S. DEPARTMENTS ARE UNDER increasing pressure to prove their value to organizations, so IS executives today employ new metrics based on business value instead of on technical measurements like uptime and processing capacity. This story addresses how CIOs can devise metrics programs that focus their staff's attention on strategic business goals.

are derived from business goals

and user-centric measures.

BY PETER FABRIS

res of distinction

A billing system snafu caused an equipment rental company—let's call it Excessive Persistence Rent-a-Tool Co. (Eprat)—to bill customers repeatedly after they returned rented items. Not surprisingly, customers did not enjoy being hounded for payment on items they had already paid for and returned. Eprat began to lose market share.

So Eprat's top executives instituted a billing accuracy measure and made bonuses for IS and billing managers contingent upon improving the billing accuracy rate by 10 percent. The billing manager grumbled, "This isn't fair to my department. Most of the mistakes are coming from IS." The IS chief complained, "This isn't fair to us. A lot of the problems are coming from billing."

"It finally dawned on [both IS and billing] that it wasn't a problem they could solve separately," says Charlie Gold, a research fellow at Ernst & Young's Center for Business Innovation, based in Boston, who

PERFORMANCE METRICS

consulted with the real company on which this story is based. "They had to solve it together."

Indeed, metrics such as billing accuracy rates derived from the efforts of cross-functional teams (which typically include IS) are becoming more popular as measures of business performance. More companies assess success today based on nontraditional metrics that gauge customer satisfaction, quality, employee competence and market agility—numbers that go beyond bottom-line results but are nonetheless predictors of future success. If a company like Eprat, for instance, loses customers in droves due to poor service, it is probably headed for serious trouble even if it remains profitable for the moment. Many of these new metrics, unlike traditional financial measures such as quarterly profits or annual revenue projections, cannot be reflected easily in a single number. Though they can be difficult to measure, these new business benchmarks receive much attention from top executives, including CIOs.

Increasingly, IS's fate is entwined with business units that are being judged according to those new business metrics. At many corporations, IS and business groups work together on large-scale projects in which IS and logistics are joined at the hip for months to streamline key business processes. The success of those projects and the performance evaluation of both IS and business unit managers often hinge on new business metrics. Thus, as metrics change for business units, IS managers must not only support business partners in reaching their new benchmarks but also proactively offer suggestions for process improvements in order to achieve higher marks. That means CIOs need to focus on business metrics as much as their colleagues who run the business do.

Some CIOs are uncomfortable with this shift in how they and their staffs are evaluated, particularly because assessing IS's contribution to business goals has always been difficult. Traditionally, IS hasn't measured its work according to business metrics, says Barry Young, a practice manager of performance measurement with Technology & Business Integrators Inc. in New York. Instead, IS focused on bits and bytes metrics that related to down time, the number of

MIPS supported by a system and the like. Though these metrics are objective and easy for IS folks to understand, they're virtually meaningless to everyone else. Many CEOs have lost patience with IS managers who won't or can't come up with numbers they can understand, Young says. IS managers have no choice but to translate those measurements into IS strategy.

NEW METRICS OFTEN COMBINE IS and business unit objectives in one measurement. For instance, Sears, Roebuck and Co.'s home services division, responsible for appliance service calls to and from consumers, pays close attention to cost per service call and cost per maintenance agreement. The home services IS unit tags the cost of systems according to those metrics so IT expenses become part of the bottom-line prices. Business unit managers track cost metrics over time, aiming to reduce them continually. In effect, IS expenses become an integral part of a business unit's metrics, says Stephanie S. Springs, senior systems director with Sears' corporatewide IS management unit in Hoffman Estates, Ill. So business managers in a sense "own" IT project expenditures (though IS consults with them closely, of course). If key business cost metrics go down, IS and business managers look good and share the rewards; naturally, they share the risk of failure, too.

Of course, systems for payroll and billing lend themselves to quantifiable measures more readily than others do. "It's far more difficult to measure the impact of strategic systems," Springs says. Sears recently built a sales and marketing data warehouse to give store managers quick access to up-to-date sales; IS measures how much the system is used. That statistic helps determine how easily the system has been accepted by users, but it does not reflect any business benefits.

Sears' data warehouse system lets merchants make better decisions, notes Jan Drummond, Sears' director of media relations. Retail managers now get sales information daily instead of once a week, which leads to more accurate consumer demand targeting, Springs says,

"You've got to understand what is going to drive the business *and* how to measure it."

—Lloyd Darlington

but finding hard data to support that conclusion is nearly impossible. "How do you measure that?" she asks. "How can you calculate new sales that would never have been made [without the data warehouse]?" In this case, anecdotal evidence is the most powerful indicator of this system's strategic impact. If a few retail managers increase shelf space for a hot line of slacks based on sales data from other regions and apparel sales climb, the store can conclude the system has value. When precise metrics are not available, companies still have to invest in strategic systems, Springs says, because they will pay off significantly even if returns are evaluated to some extent according to gut feelings.

JUST AS I.S. MUST WORK CLOSELY with business groups to design successful systems, technologists and business managers must collaborate on metrics that will define success for projects designed to meet key business goals, points out Lloyd Darlington, chief technology officer and general manager of Bank of Montreal's operations group based in Toronto. "You've got to understand what is going to drive the business *and* how to measure it," he says. Bank of Montreal designed a "multihundred-million-dollar project" called Pathway, a common platform for each bank branch to track commercial account information. The company spent about a year analyzing business processes before systems design work even began. Business sponsors had to articulate the project's expected benefits and how to

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judge whether the project achieved them. "We needed to understand the measures of success: new customers, balances generated, fees generated, costs cut," Darlington says. With specific targets established, Bank of Montreal gauged progress early as it studied the impact of Pathway at a few test sites.

The company monitored user acceptance of the system in the pilot phase, comparing business performance improvements of branches testing the new system with the performance of control groups of branches not equipped with Pathway. The pilot sites tested the validity of the chosen metrics to show how management could help sales representatives get the most out of Pathway, Darlington says. He adds that users have to understand what the business benefits of a new system are and be challenged to meet goals. For example, the system gave commercial account managers valuable client information in an easily accessible format, enabling them to deduce which clients would be good prospects for additional Bank of Montreal services.

But information alone won't boost business. "If you want account managers to spend more time with customers, you have to make it worthwhile for them to do it," Darlington says. That means providing rewards and recognition for generating new business. Measuring progress of the Pathway project in the early stages led to some system improvements as well. "We learned a lot about the importance of usability and the importance of having real, live, passionate branch people involved in the design," Darlington says. Many users had not used PCs before, so IS taught them basic computer skills.

Business unit managers are in the best position to set performance goals for a major systems project, but IS provides a reality check about how technology can contribute. At E.I. du Pont de Nemours & Co. in Wilmington, Del., scheduling and timing are the trickiest parts of these IS/business unit negotiations. "Business [managers] are always very eager to get a project done," says Kent Baldwin, manager of planning and analysis for DuPont's central IS unit. Baldwin says a typical discussion goes like this: "The business unit manager says, I want to get this done in a year. IS says, In order to do

that, we need X number of your people with Y number of our people plus some outside consultants." Often, the business unit manager can't afford to supply as many people as IS needs or the most experienced business unit managers need to run day-to-day operations and may not be able to commit themselves full-time to a special project.

SUCH SITUATIONS TEST THE communication and collaboration skills of IS personnel, which become more important the more IS teams with business partners and, though difficult to measure, often factor into IS performance evaluations. What these ratings measure is arguably unmeasurable, but they can provide some gauge of the effectiveness of IT/business interactions.

A number of corporations attempt to quantify IS skill sets at least in part by surveying users. Some go beyond traditional surveys that gauge overall user attitudes toward IS to measure how IS is contributing to process improvements and strategic goals.

Companies like The Allstate Corp., a Northbrook, Ill.-based insurance provider, follow up major systems projects with user surveys to assess how well internal business partners think IS supports them. The surveys ask questions about whether IS met its deadlines and delivered a product that worked as well as warm-and-fuzzy issues like how well IS personnel worked with business partners. The most important question on Allstate's user surveys is "Would you re-use us for this type of service?" according to Patricia Coffey, director of human resources development for the company's technology shared services group. Users typically respond positively to this question, Coffey says, but when they don't, IS knows it has work to do. When faced with negative survey results, project coordinators follow up with business partners to find out why a project went awry. Surveys alone can't indicate how IS should improve its processes, though. It's up to IS to reach out to users to determine how to support business partners better.

Not surprisingly, user satisfaction surveys can put IS in the hot seat, says Ernst & Young's Gold. "If you are going to start asking users what they think, you've

"If you are going to start asking users what they think, you've got to be prepared to respond. If you kick up a hornet's nest, you can't say you're too busy to deal with it."

—Charlie Gold

got to be prepared to respond," he says. "If you kick up a hornet's nest, you can't say you're too busy to deal with it." At the very least, CIOs need to give timely feedback to disgruntled users and show some empathy, he says.

But user satisfaction surveys are subjective and can be misleading. Business unit managers are understandably reluctant to be too critical of their golfing buddies in IS. To address the "if you scratch my back, I'll scratch yours" syndrome, J.P. Morgan & Co. Inc. is refining its user satisfaction survey methodology. "Our current process provides a relatively weak metric," admits Tony Hutchings, vice president of software quality for the New York financial services company. "It can be like a beauty parade."

After projects are implemented, J.P. Morgan asks business unit managers to rate the system's quality and the team's performance. Hutchings says soon the surveys will focus on specific issues contained in original project documentation. He hopes such refinements will encourage business partners to sign off on system specifications early and assess whether the project team delivered them as planned.

Ideally, business metrics and user satisfaction surveys should prompt IS to improve its contribution to meeting strate-

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NCR debuts mammoth 11 terabyte data warehouse

EMC, NCR to Demonstrate Largest Data Warehouse

By a WALL STREET JOURNAL Staff Reporter
HOPKINTON, Mass. — EMC Corp. and NCR Corp. tomorrow will unveil what is believed to be the world's largest data warehouse, containing 11 terabytes, or 11 trillion bytes, of information.

The product, which will be showcased in Tokyo, combines EMC's open-system computer-storage product, the Symmetrix 3500, with a powerful new server developed by NCR, a unit of 11 terabytes.

age-system maker recently shifted its sales strategy to include more OEM agreements.

The 10 high-end storage units EMC sold to NCR are valued at over \$14 million, the companies said. In the demonstration, Dayton, Ohio-based NCR has connected 50 workstations to the database, generating a volume of transactions equivalent to 3,000 users querying the data warehouse, the

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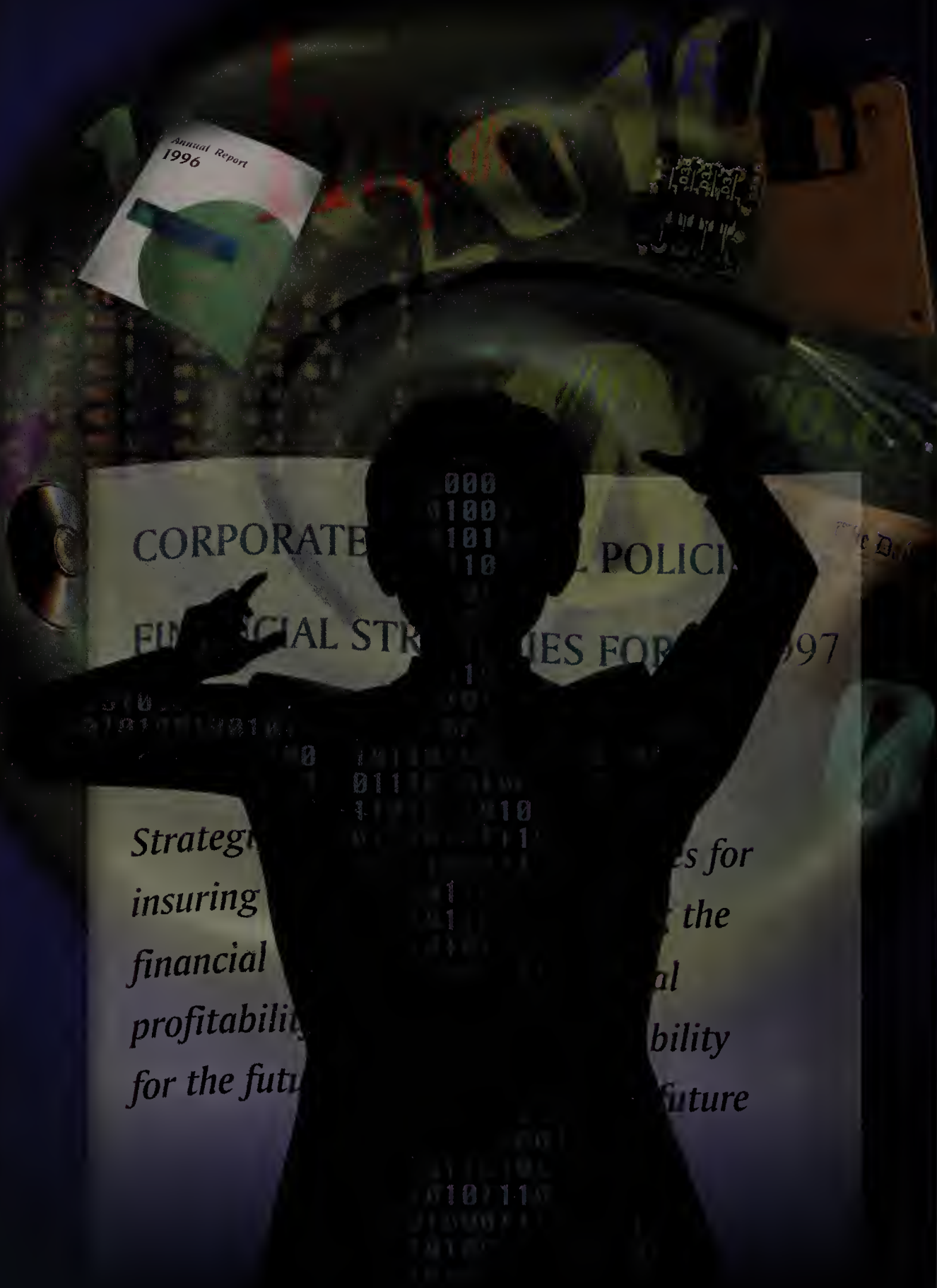


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Leading the Charge in Turbulent Environments *IT as a Change Agent*

gic goals. A number of companies have revamped their compensation practices to encourage constant metrics improvements in so-called "soft skills" areas.

AT BANK OF MONTREAL customer satisfaction data and communication skills account for nearly half of individual performance assessments within IS. "We're expected to continually improve our customer satisfaction [metrics]," Darlington says, "and customer satisfaction is linked with the health of our relationships with our internal customers." Bank of Montreal has a third party conduct these surveys to add a dose of objectivity to the process. The organization takes these surveys seriously. "It's possible for a unit to do well on financial results but have poor customer satisfaction and poor employee training assessments," Darlington says. That means a reduced bonus even if an IS group's business unit posted superior financial results.

Customer satisfaction indices and other user-centric metrics can provide valuable insight for CIOs. But even with best intentions, metrics programs frequently lose momentum, wither and die. "Measurement mortality is high—only one in six programs last more than two years," says Howard Rubin, president of Rubin Systems Inc., a consulting company based in Pound Ridge, N.Y. When metrics programs go astray, he explains, it's usually because what is being measured is no longer a key indicator of success. "Measurement programs should be designed to be fluid," Rubin says. When business objectives and strategies change, so should the metrics that reflect them.

Despite the difficulties in implementing results-centered metrics programs, IS managers say these new measures produce positive results for IS shops and organizations as a whole. "I think it is an exciting change," says Colleen Bruckner, director of application enabling for Allstate. "[IS person-

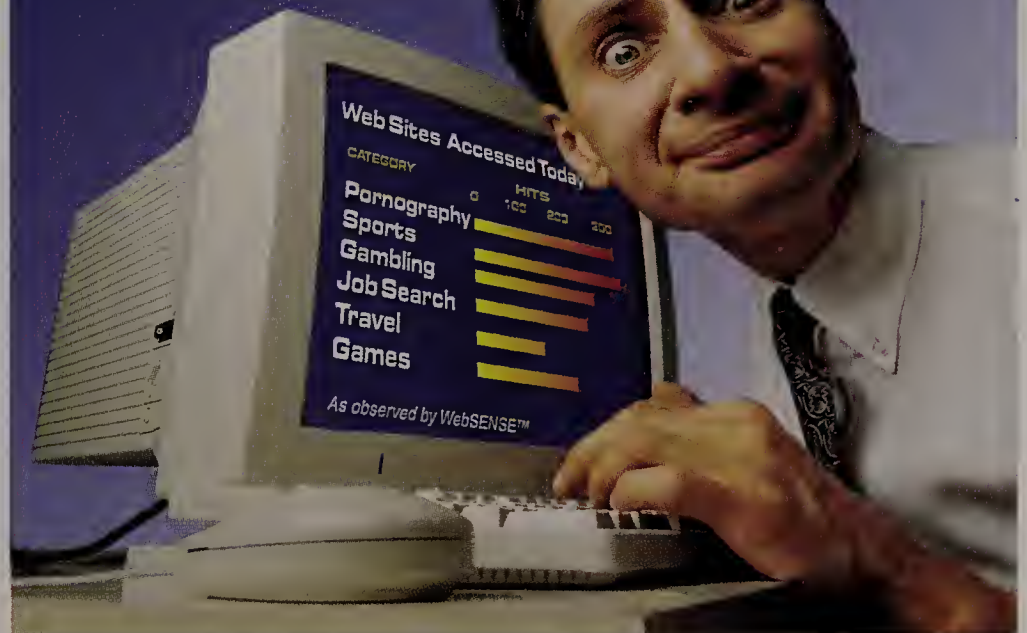
nel] can now see for themselves what the [IT] impact is on the business and see themselves much more involved [in the business]." Bank of Montreal's Darlington says new metrics have significantly changed the behavior and attitudes of IS workers. "We have much higher levels of commitment to achiev-

ing business goals and more effective collaboration and sharing of resources," he says. "But most importantly, there's a sense of urgency and higher degree of focus." **CIO**

Staff Writer Peter Fabris can be reached at pfabris@cio.com.

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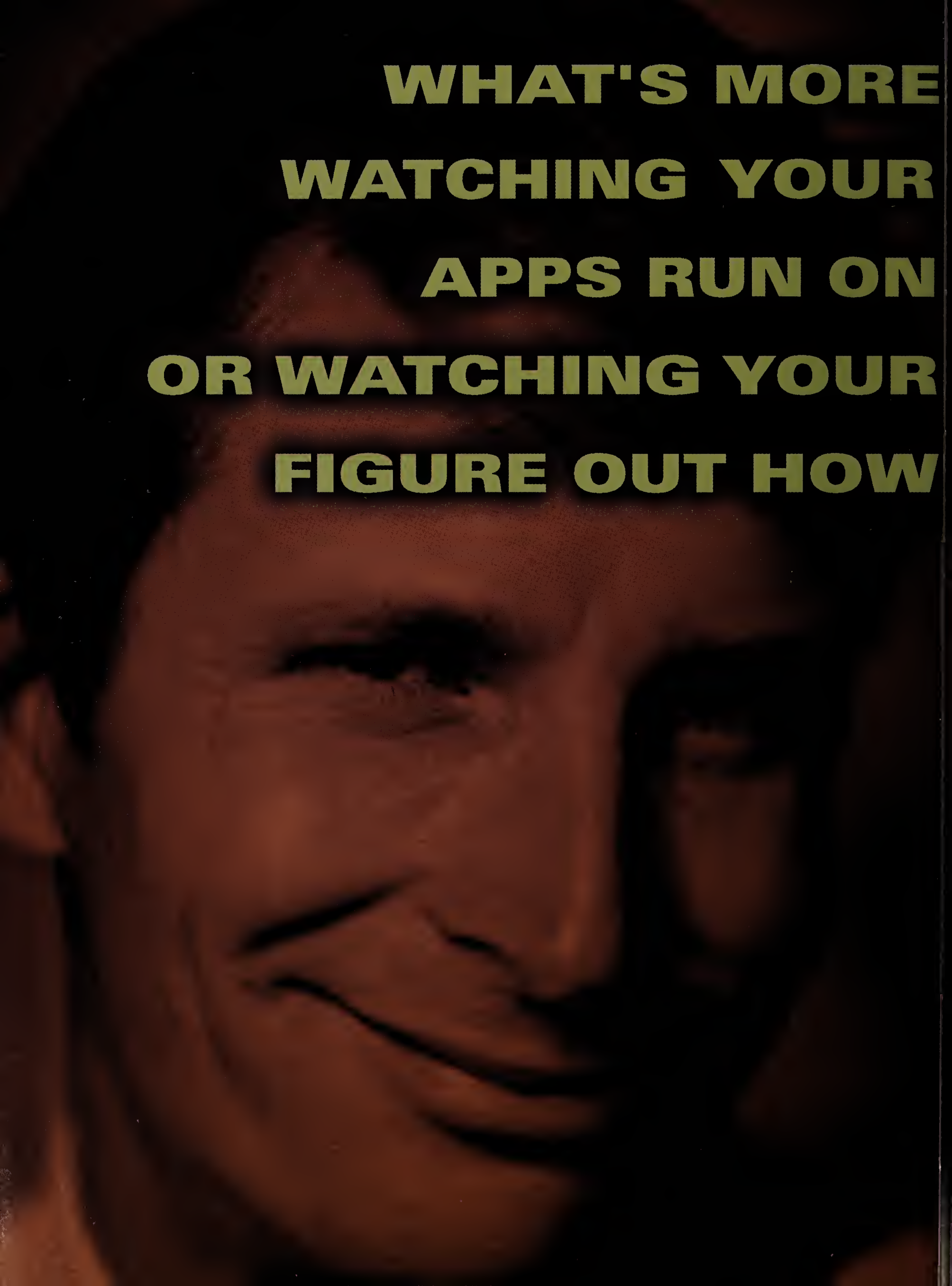
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BY HEATH ROW

LEGEND, LORE

and even the funny pages have extolled the value of sidekicks to any hero. Scene: Batman, the Caped Crusader, is tied to a post in a cluttered and cobwebbed factory, and the Joker, his arch nemesis, is about to douse him with a vat of bubbling chemicals. At the last instant, just as the Joker is about to pull the lever, Robin, the Boy Wonder, crashes through a skylight. He socks the Joker in the jaw and saves our hampered hero. Holy close call, Batman!

IN THE WORLD OF I.S., CLOSE CALLS might not be as exciting or death-defying, but resourceful sidekicks can still help save CIOs. In some companies, the sidekick is a CTO who keeps tabs on emerging technologies. In others, the Number Two is someone picked from the ranks to spot the CIO on tough strategic maneuvers, pitch in with the daily grind, lead projects that require extra attention or cover the CIO when he or she ventures into dangerous political territory.

"Most CIOs need a technology architect and service delivery czar," says Jim Kinney, CIO of Kraft Foods Inc. in Northfield, Ill., and president of the Society for Information Management. "In the bigger organizations, you cannot do [everything] yourself."

Ideally a second-in-command is more than a person who shares the workload or deflects political bullets; he or she becomes an integral partner in devising IS strategy. These partners might work within IS or even come from business units paired with IS for special projects. But how CIOs select and work with their seconds-in-command depends on personal management style, business needs and, ultimately, chemistry. As these three profiles show, there are no hard-and-fast rules for everyday heroes and their allies.

Reader ROI

IT CAN BE LONELY AT THE TOP of the IS heap. Some CIOs have made the job easier by appointing trusted lieutenants to share the tactical load. This story examines:

- ▶ Different approaches to defining a partner's role
- ▶ How CIOs can shape their own role in a company by managing this partnership
- ▶ How hierarchies affect the selection of a second-in-command and the resulting working relationship

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IN THE TIME THAT TOM WOTEKI HAS WORKED with his second-in-command, Hall Gregg, she has been his mole, flak jacket, mouthpiece and trusted management partner. Before becoming CIO of the American Red Cross in Washington, Woteki had worked with Gregg at Merck & Co. Inc., in Whitehouse Station, N.J., and during their three years together there, the two developed a tight-knit working relationship. Gregg had been instrumental in helping Woteki adjust as director of IS at Merck, which had just been through a tumultuous process-reengineering effort in its research laboratory. So three months after Woteki came to the Red Cross, he created a new position there—deputy CIO—and convinced Gregg to take it. Specifically, he wanted her help for a massive standardization project to consolidate the nine home-grown systems that monitor the Red Cross's blood donors and high-risk patients, blood products such as platelets and white blood cells, and the processing and distribution systems.

Woteki says he needed Gregg initially to deal with staffers and superiors while he lobbied for the changes that would make the standardization successful. Because of the vast scope of the project, he needed a manager to help with day-to-day IS doings as well as act as a sounding board when he wasn't able—or welcome—to be in the loop. "What I needed was somebody to watch my back," Woteki says. "Hall was more internally

focused on the organization to learn what was going on. Then we could collaborate on what people were saying and how people were saying it, reading the tea leaves of our organization."

Upper-level management at the Red Cross isn't quick to offer suggestions for changes in his management tactics, Woteki says, so Gregg's critique of his style has helped him refine it and gives him valuable insight that his supervisors wouldn't (or couldn't) provide. "You don't get feedback from your boss," he says. "Hall helps me define my role by reflecting my behavior back to me."

Gregg, whose hybrid role combines the responsibilities of a chief of staff and project leader, says she is often the first line of defense when problems arise. Her peers—IS staff and other departmental directors—often seek her advice or opinion before going to Woteki. "They'll come and tell me when they're upset or worried about something and they're hesitant to talk to Tom," Gregg says. "Overcoming people's angst and anxiety is hard in any IS shop."

But Woteki says Gregg is more than a mirror or sounding board; she also manages high-profile strategic projects that have to be done right. Shortly after Gregg's arrival at the Red Cross, Woteki put her in charge of the organization's enterprisewide standardization effort, the Manufacturing and Computer Standardization project (MACS). While the organization once had between 20,000 and 30,000 standard operating procedures, Gregg says MACS will replace them with 44 standard procedures for tracking the Red Cross's blood donors and products. That way, the almost 6 million pints of blood the organization processes annually will be guaranteed to be handled the same way in each of its 39 regional processing centers.

Because of her performance on this project, Woteki appointed Gregg the head of the implementation and support division. In that role, Gregg will have a chance to further develop her management skills as she oversees the Red Cross's regional IS staffs, which used to report to the regional CEOs.

Opportunities like that make being Woteki's deputy worthwhile, Gregg says. As a line manager, Gregg has learned to be an effective leader whether she is dealing with her staff or acting as Woteki's proxy with other Red Cross executives. Sometimes, Gregg says, she and Woteki double-team business peers so people get whatever gospel IS is preaching from more than one person. "[Selling IT ideas to others] requires expanding your scope and being able to talk their talk as well as your own," Gregg says. "Someday I hope to be a CIO. I think the experiences I'm getting are positioning me well for that."

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Allan Frank, CTO (left)
Salvatore Giordano, CIO

LIKE PARTNERS IN AN ARRANGED MARRIAGE or an uneasy military alliance, Allan R. Frank and Salvatore Giordano have had to spend some time getting acquainted and learning how to work together. Frank, KPMG Peat Marwick's CTO, hired Giordano last spring as the New York-based consultancy's CIO smack dab in the middle of an IT reorganization project, which left them little time to form a work relationship before heading into the fray. Their story is largely one of role definition and development.

Frank says the CIO before Giordano left the company partially because of changes in Peat's IS environment and an increased need to steer internal IT efforts in the direction of the company's clients' needs. When Frank took on the CTO role, which includes sitting on Peat's executive board, the company cast him as an internal strategist and a partner with outside companies, not solely as a technologist.

"I sit [on the boundary between] the inside and the outside," Frank says. "Because technology is our product, I play a key role in identifying from a marketplace perspective the role of technology."

Frank says he developed Giordano's role as Peat's CIO with business needs in mind. While searching for a second-in-command and interviewing people to fill the CIO position, Frank looked at candidates from the Big Six as well as from traditional technology companies. He wanted to hire someone with a sense for IT as well as an understanding of the business; because Giordano had worked with Citicorp and Coopers & Lybrand LLP, he fit the bill. "What I didn't want was

"He's taking some of the high-level strategy I've laid out and is using it to drive the business. But he will disagree and push back. He's not a yes-man."

—Allan Frank

the typical CIO, someone who went up through the ranks of the IT organization," Frank says. "[Salvatore is] executing exactly the role we had in mind."

As the strategist, Frank plans Peat's architecture and infrastructure, which Giordano then implements internally to create an incubator for strategies and technologies the company might use eventually with other organizations. Frank says the goals are to have a laboratory for best practices, with IS implementing projects—such as a nationwide help desk for users and a Web-based knowledge center to bolster development efforts in Peat's technology labs—and to serve the company's 500 employees.

Giordano says reporting to Frank allows him to initiate projects and run with them without worrying about selling ideas to higher-ups. The ideas have already been sold—by Frank—and Giordano can concentrate on making them a reality without having to be on the defensive. "My role is to be sure projects get done," Giordano says.

Frank says Giordano focuses on the tactics necessary to implement his IT planning, offering feedback and occasional reality check when appropriate. "He's taking some of the high-level strategy I've laid out and is using it to drive the business," Frank says. "But he will disagree and push back. He's not a yes-man."

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Curtis James, (right)
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ages all of the hospital's paperwork from pre-registration and insurance verification to billing. The system Valencia devised reduces the average registration time from 15 minutes to 10 and speeds insurance claims resolution. Before the system was rolled out, claims were processed in 24 hours, Valencia says. Now they're resolved immediately.

Knowing James is there to provide support—financially and organizationally—makes things easier, Valencia says. "If I can put my trust in somebody and not have to guard my back, I can work quickly," he says. "My working relationship with Curtis has helped St. Vincent's."

James and Valencia's good relationship has greased the wheels of the proj-

"If I can put my trust in somebody and not have to guard my back, I can work quickly."

—Jose Valencia

ects that the two have worked on together. After they bounced around some ideas about imaging in late 1990, IS moved into development right away. "That's pretty much how we work," Valencia says. "We just make sure we have enough funding, enough support and a good plan."

As the leader of the imaging project, Valencia says he is allowed to mix strategy and tactics, working with James to craft the project's vision and then bringing it to fruition on his own. The opportunity to do both keeps Valencia at St. Vincent's, he says: "I don't want a job where I can maybe get a little more money but can't do all the things I can do here."

By freeing project leaders to focus on a single aspect of IT development at the hospital, James can meet the organization's business needs while creating an atmosphere in which IS staff can thrive. "Your talent is going to come forward in an environment like that," James says. "It's a way to dedicate resources and to allow people to think out of the box. I've worked with Jose the longest and rely on him to do some of these things that are new and innovative."

In fact, James doesn't touch much of the research, development and deployment done by St. Vincent's 40 IS staff members. Instead, he develops close working relationships with his project leaders and lets them do what they need to do. "My approach is to always provide the resources and the support and give overall vision [while allowing] people to do the job they're accountable and responsible for," James says. "If I want something accomplished, I know I can count on Jose." 

Staff Writer Heath Row can be reached at hrow@cio.com.

WHEN JOSE ANTONIO VALENCIA, assistant vice president of business services for St. Vincent's Hospital, started working at the 338-bed Birmingham, Ala., hospital in 1987, he often felt like he was putting together a puzzle that was missing key pieces. Valencia wanted to invest \$10,000 to replace some of the hospital's obsolete hardware, but the officer at the head of St. Vincent's operations division would have nothing to do with it.

Sister Mary Francis Loftin, then president of the hospital, saw the need for change. She restructured Valencia's reporting relationship so he fell under the purview of Curtis James, executive vice president of finance, contracts and information. James heard Valencia's case, took one look at the hole-riddled system and OK'd the investment.

"There were some things Jose had tried to get done in terms of technology, and they were always denied," James says. "The easiest thing for me to see was that what he was looking for was legitimate."

Since Valencia began working under James's lead, he has helped shorten the hospital's accounts receivable timeline from 78 to 26 days, thus increasing cash flow. In 1991, James put Valencia in charge of a document imaging system that man-



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Edited by Elaine Cummings

It's in the Cards

With PC cards, mobile systems have everything to gain in easy, practical ways

BY JOHN EDWARDS

THINK OF IT AS SPINACH for computers—a silicon card placed into the appropriate port of any laptop creates a Popeye-like transformation. Whether an organization's goal is to upgrade its mobile communications or add state-of-the-art features, PC cards offer an inexpensive, practical and flexible means to get to those ends.

"It's becoming an increasingly mobile world, and PC cards are helping to provide the connectivity," says Bob Egan, a research director at Gartner Group Inc. in Stamford, Conn. PC cards (formerly known as PCMCIA cards) are credit-card-size plug-in devices that provide a wide range of expansion capabilities and are designed to work with most notebook PCs, handheld computers and similar products.

The cards are designed for three standard performance levels. Type I devices, the thinnest kind, offer add-on DRAM, SRAM or flash memory support. Thicker Type II cards provide telecommunications, connectivity or multimedia capabilities. The thickest cards, Type III units, offer

mass storage support, usually in the form of a compact hard drive. PC card technology allows IS managers to install new, often unique capabilities such as geographical positioning in some or all of an organization's mobile systems, as well as add state-of-the-art functions like network adapters to older systems.

While PC cards are available to meet a wide range of needs, Egan says most buyers are seeking new or enhanced communications capabilities. Data/fax modem cards are the top-selling products, with 28.8Kbps data/fax models riding the crest of popularity, and dozens of vendors, including many desktop PC modem makers, are offering models.

ISDN cards, wireless modem cards and cellular modem cards are also attracting buyers. "ISDN PC cards, which allow mobile system users to transfer data at 128Kbps, are a relatively new innovation, but they have the potential to transform on-the-road communications," says Pierre Trudeau, research director of Eicon Technology, a Dallas-based ISDN PC card maker. "Notebooks generally don't come with built-in ISDN support, and with an ISDN PC card, it's a real convenience for users not to have to carry along an external 'box,'" he says. Other ISDN PC card vendors include Racal Datacom, Fujitsu Microelectronics and Hayes Microcomputer Products.

The big disadvantage is that the cards, like desktop ISDN modems, can be used only at sites providing ISDN service—still a relatively uncommon resource. But for mobile users who have access to ISDN lines at places like branch offices or conference centers, the high-speed technology can be a powerful productivity tool. "As workers become used to ISDN in the office, they'll also want to use it while on the road," says Trudeau. "We'll see ISDN PC card technology become more widely used as ISDN becomes available in more places."

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tinuous communications, regardless of the employees' location, can offer them mobile systems equipped with a wireless PC card modem. These devices, which work with the wireless data radio networks that blanket North America, keep traveling employees in touch with coworkers, clients, customers and prospects. Many models even hold messages in memory for retrieval at the user's convenience. Wireless PC card modems include IBM Corp.'s Wireless Modem, U.S. Robotics Inc.'s Megahertz AllPoints Wireless PC card and Motorola Inc.'s Personal Messenger 100D.

Both of the major wireless services, Ardis and RAM Mobile Network, have aligned themselves with one or more Wireless PC Card modem makers. The IBM and Motorola cards work with the Ardis network, while the U.S. Robotics model supports the RAM Mobile Network. "Wireless PC card modems have had a very big impact on the wireless industry, basically reinvigorating it," says Robert Bauer, vice president of marketing for U.S. Robotics in Salt Lake City. "The technology allows mobile users to get mail and information anytime, anywhere." Cellular PC card modems are also gaining popularity as more mobile users require easy dial-up access to networks, online services, the Internet and other information resources. Vendors offering cellular PC card modems include Black Box Inc., Creative Labs Inc., Hayes Microcomputer Products Corp., Motorola and Zoom Telephonics.

"The Internet and an overall increased reliance on networking technology will force many IS departments to acquire cellular cards in the near future," says Gartner Group's Egan.

The market is booming in part because PC card technology has resolved some of its compatibility issues. According to Egan, the PC card industry has recovered from most of the growing pains that have plagued it since its inception. "Things have been greatly simplified for buyers in the past several months," he says. "The market has become more stable because the technology has become more stable and more established companies have built a presence in the field."

Passing the Bar Codes

*Automatic ID technologies
are making operations more efficient*

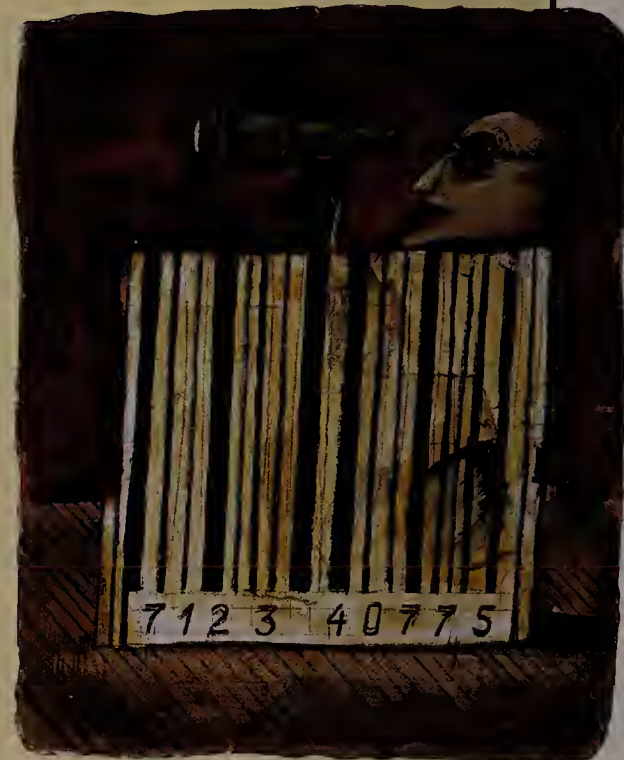
FUNDAMENTALLY, automatic identification is about control. The technology is an important step in maximizing supervision of employees without intruding on them too much.

AUTO-ID

In the last five years auto-ID has undergone a capabilities explosion. New or improved technologies have vastly increased what auto-ID can do and the conditions under which it can do it. Even the humble bar-coded label has become much more useful, thanks to developments like intelligent scanners that can reconstruct the information on a damaged label or a label presented at a bad angle. There are even invisible bar codes, printed in inks that only appear under special lights.

But auto-ID has gone well beyond bar codes. RF-ID systems using active radio frequency tags (actually tiny transmitters) can keep track of items over a multi-acre cargo terminal—or, in some versions, anywhere in the world via satellite. Memory buttons can store megabytes of information in a steel capsule that looks like a watch battery. Passive radio frequency tags are being built into expensive consumer products, like shoes, as a security measure. Other passive RD-ID tags are tracking everything from semiconductors in Silicon Valley to storks in Europe.

That ability to read and record information is backed up by a new



generation of communications systems built around intelligent terminals, including many handheld models, and spread-spectrum radio communications. If the Personal Digital Assistant like Apple Computer Corp.'s Newton didn't make a mark in the general business world, PDA technology has certainly had a huge impact on the world of auto-ID. Terminals now offer handwriting recording and real-time updating from a central database. That in turn makes it possible, for example, to do things like give a forklift driver a pick list that not only shows where everything is in the warehouse, but lays out the most efficient route to follow in rounding it all up.

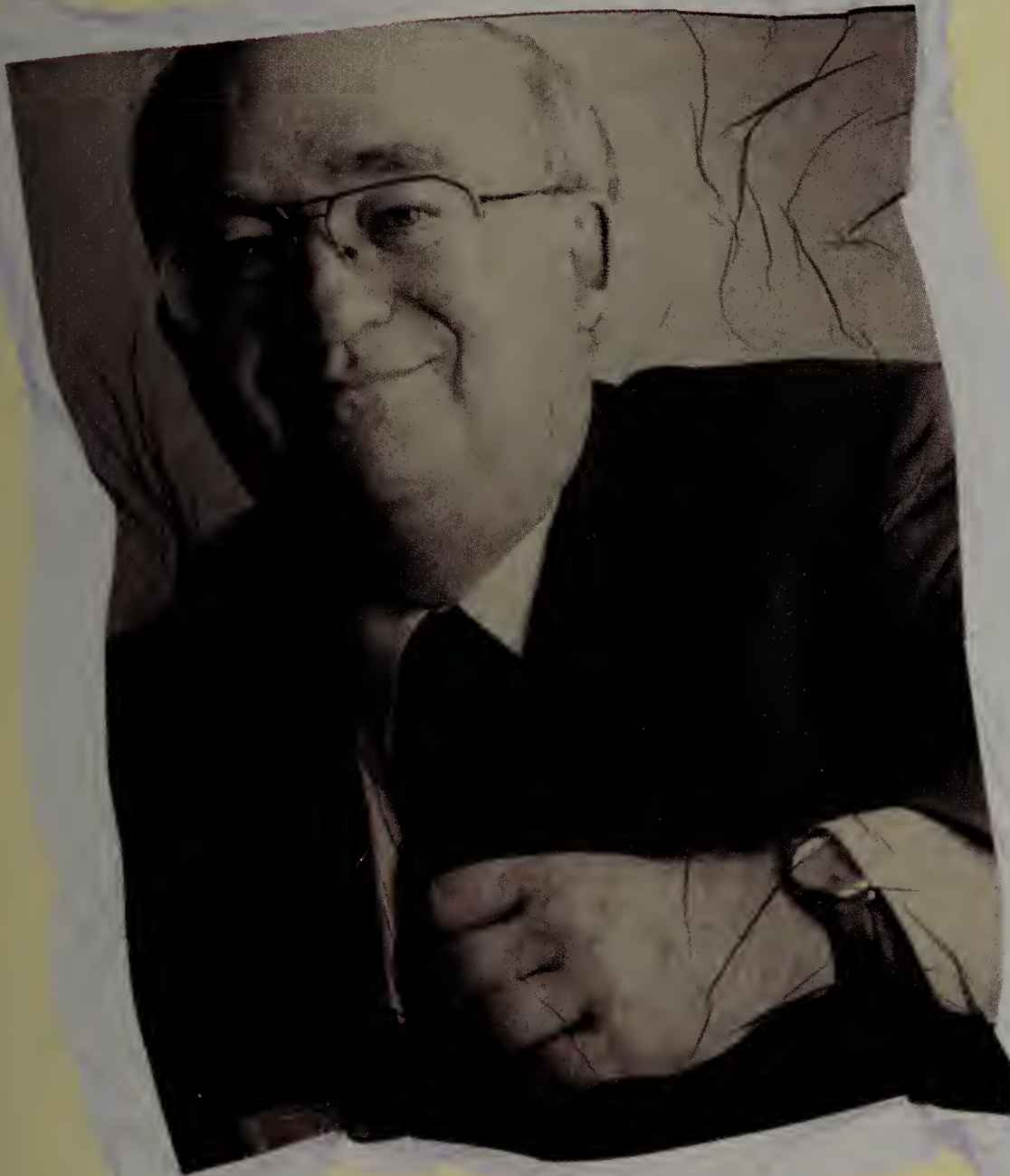
—Rick Cook

Prior to last year's release of Microsoft Corp.'s Windows 95 and PCMCIA 2.01, the updated PC card specification, buyers could never be certain that a particular PC card model would be compatible with a specific mobile system. "You never really knew what you were getting," says Egan.

"There were differences in circuitry on the platforms themselves, as well as with the software drivers. The situation was very confusing."

Today, the compatibility problem has been almost entirely resolved (with the exception of older notebooks that feature 5-volt card slots), and buyers no

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longer have to ask manufacturers to supply product compatibility lists. The revamped PCMCIA 2.01 specification also allows PC card vendors to offer customers several performance enhancements. PCMCIA 2.01's new 3.3-volt power standard, for example, extends the battery life of PC card-equipped mobile systems. The new specification also supports CardBus bus mastering, which closely follows the desktop Peripheral Component Interconnect (PCI) 32-bit bus standard.

As a result, PC cards can run at 33MHz bus speeds instead of the poky 8MHz rate supported by the previous specification. Another performance enhancement is direct memory access, which allows adapters on the bus to communicate with each other directly and more efficiently by bypassing the mobile system's CPU.

Local area network adapters account for another rapidly growing PC card market segment. PC card LAN adapters allow users to plug their mobile systems into a network in their own office or, while traveling, into a network on the other side of the world. PC card LAN vendors include 3Com, AMP, Accton Technology Corp. and IQ Technologies.

The LAN market is one area where PC card buyers can still bump into some confusing compatibility issues. Like desktop LAN adapter buyers, PC card shoppers must choose Ethernet or Token Ring product. Buyers must also consider carefully a card's network operating system (NOS) compatibility. "Some PC cards support several NOS products, others only one or two," says Egan. "It's up to the buyer to figure out with which NOS a particular card will work. That can require some careful research."

But once they're installed, PC card LAN adapters can be useful tools. "With notebook PCs in particular becoming more desktop-like and easier to use, it makes great sense to give users the convenience of plugging their notebooks directly into a network," says Jim Soriano, a technologist for Xircom, a PC card LAN maker in Thousand Oaks, Calif.

And with more organizations adapting their notebooks to incorporate multimedia capabilities, several vendors have found niches by offering PC cards that provide various audio or video functions. The IBM PCMCIA 3D Sound Card, for example, offers wavetable synthesis, MIDI support and an optional dual joystick support. Margi Systems in Fremont, Calif., is offering notebook users enhanced video capabilities via PC Card technology. The company's \$199 MPEG To Go product enables notebooks to play MPEG-1 video for business presentations and other applications. The card takes advantage of the Zoomed Video (ZV) capa-

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Speaking in Tongues

If EVERYBODY IN YOUR OFFICE thinks they need a specially trained logician to extract relevant information from your company's database, have we got news for you. No more grids, no more Boolean delimiters, no more hunting down the office expert who actually knows SQL syntax and semantics. **English Wizard**, from Linguistic Technology Corp. of Littleton, Mass., recognizes plain English, the kind Miss Grundy taught, and can be plugged into standard access tools from Oracle Corp. or Informix and Microsoft Corp.'s Access and SQL Server.

You can type such queries as "How many customers bought peanut butter and jelly sandwiches last quarter?" and get an answer—no kidding—and if you happened to ask about the PBJ consumption rate for the last three months, the information will be summoned. The parser handles calendar dates and associated ideas such as "younger," "age" or "when," and asking for a range of months or specific days of the week poses no special problem.

Should English Wizard become confused, it asks for clarification. End users with unique needs can train English Wizard to recognize special vocabulary, and with a few mouse clicks any response can be converted to a graphical display or spreadsheet compatible with most popular programs. Future amenities include a voice recognition system, which means many users will continue to talk to their computers but can now assure friends that they aren't crazy; the machine truly understands them.

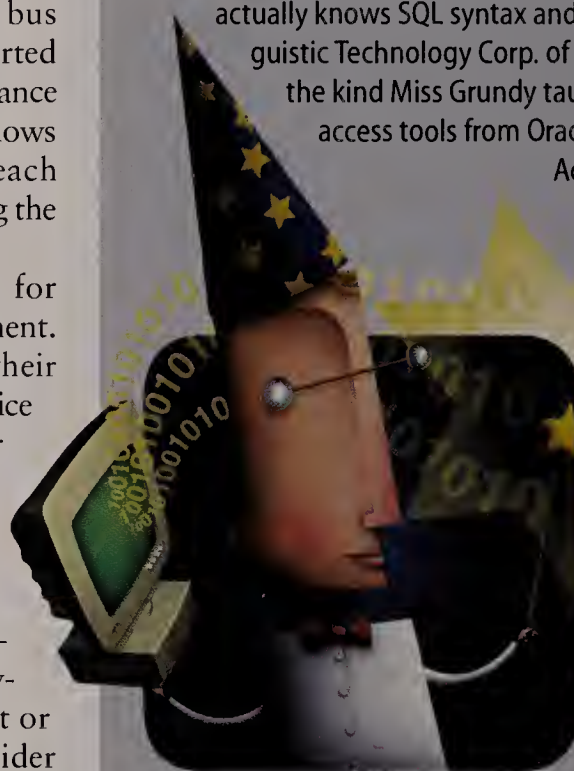
The online demo linked to a database about the Academy Awards is a tad sluggish because of pipeline limitations, but you can still settle an office argument about who won an Oscar for what in what year at www.englishwizard.com. English Wizard retails for \$100. For more information, call 800 425-8200.

PC to Go

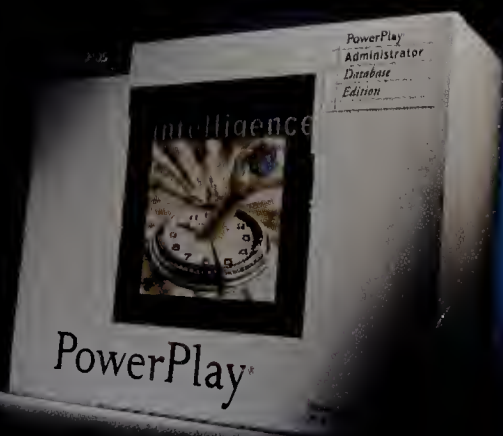
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bility that's available on some newer notebook models. ZV gives PC Cards direct access to a notebook's video controller for the generation of high-speed video.

A PC card SCSI interface can attach a scanner, disk drive and other external peripherals to a mobile system. Several companies market PC card SCSI adapters, including Adaptec Inc. and Centennial Technologies Inc. Thanks to Windows 95 and PCMCIA 2.01, these devices configure immediately and painlessly, although some peripherals require a separate driver (usually supplied by the product's vendor). "A SCSI PC card opens up a wide range of expansion possibilities," says Egan. "It allows mobile users to hang a variety of peripherals off of their systems, including products that may be shared with desktop PCs."

Dealing with PC cards can be a challenge for managers and users alike. While some vendors offer "combo" PC cards featuring dual functions (such as a combination LAN adapter/modem), the vast majority of products are single-task devices. Since most mobile systems can only accommodate one or two PC cards (depending on the type of system and card), users who want to take advantage of several types of cards face the headache of swapping and tracking an array of devices.

According to Xircom's Soriano, card swapping isn't as pressing a problem today as it was a few years ago, thanks to the development of combo cards and the fact that several traditional PC card uses, such as memory and storage expansion, have been rendered largely superfluous by more fully config-

ured mobile systems. But as new PC card applications emerge, the problem could resurface with a vengeance, and many department managers could find themselves in the unhappy position of administering extensive PC card libraries.

CIOs shouldn't expect the desktop and mobile system expansion card markets to merge anytime soon. Although some industry experts predicted long ago that the desktop PC industry would soon embrace PC card technology, there's no evidence yet

of such a development. According to Eicon's Trudeau, desktop PCs with external PC card slots would greatly simplify card upgrades and allow identical plug-in peripherals to be used on desktop and mobile systems.

But PC card technology may be too convenient for some: Many managers fear that more than a few desktop users will simply pocket PC cards for personal use. At any rate, with PCI and ISA products dominating the desktop add-in card market, PC card fans will have a hard time convincing desktop

"With notebook PCs in particular becoming more desktop-like and easier to use, it makes sense to give users the convenience of plugging their notebooks directly into a network."

—Jim Soriano

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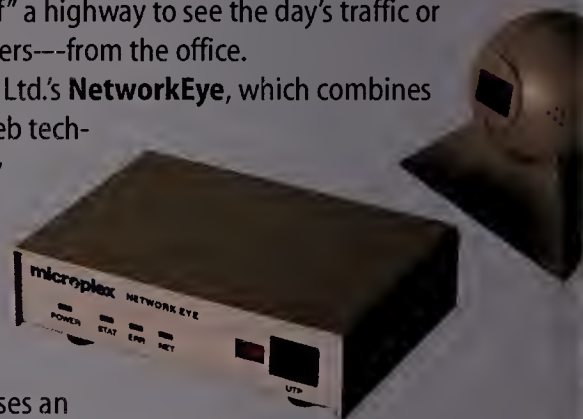
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Outside the workplace, the device might be used to enhance the message provided by a company's Web site. For example, a ski resort that prides itself on its facilities and prime conditions could show off those features in real-time, giving potential customers a chance to see up-to-the-minute information and conditions, including live images.

For more information about the NetworkEye/270 Frame Server, visit the Microplex Web site at www.microplex.com/.



computer manufacturers to provide support for the products. PC cards likely will remain the preferred tool for upgrading mobile systems well into the 21st century. "I think the market's just getting started," says Egan. "In the years to come, this field will be a hotbed for innovation." **CIO**

John Edwards is a freelance writer based in Mt. Laurel, N.J. He can be reached at 70007.412@compuserve.com.

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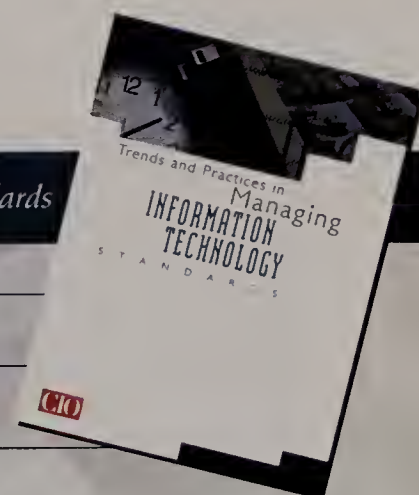
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**Nicaragua:** PC World Centro America; **Norway:** Computerworld Norge, CW Rapport, Datamagasinet, Finansial Rapport, Kursguide Norge, Macworld Norge, Multimediaworld World Norway, PC World Ekspress Norge, PC World Nettverk, PC World Norge, PC World ProduktGuide Norge; **Pakistan:** Computerworld Pakistan; **Panama:** PC World Panama; **People's Republic of China:** China Computer Users, China Computerworld, China InfoWorld, China Telecom World Weekly, Computer & Communication, Electronic Design China, Electronics Today, Electronics Weekly, Game Software, PC World China, Popular Computer Week, Software Weekly, Software World, Telecom World; **Peru:** Computerworld Peru, PC World Profesional Peru, PC World SoHo Peru; **Philippines:** Click!, Computerworld Philippines, PC World Philippines, Publish in Asia; **Poland:** Computerworld Poland, Computerworld Special Report Poland, Cyber, Macworld Poland, Network Poland, PC World Komputer; **Portugal:** Cerebro/PC World, Computerworld/Correio Informático, Dealer World Portugal, Mac*In/PC*In Portugal, Multimedia World; **Puerto Rico:** PC World Puerto Rico; **Romania:** Computerworld Romania, PC World Romania, Telecom Romania; **Russia:** Computerworld Russia, Mir PK, Publish, Seti; **Singapore:** Computerworld Singapore, PC World Singapore, Publish in Asia; **Slovenia:** Monitor; **South Africa:** Computing SA, Network World SA, Software World SA; **Spain:** Comunicaciones World España, Computerworld España, Dealer World España, Macworld España, PC World España; **Sri Lanka:** Infolink PC World; **Sweden:** CAP&Design, Computer Sweden, Corporate Computing Sweden, Internetworld Sweden, it.branschen, Macworld Sweden, MaxiData Sweden, MikroDatorn, Nätverk & Kommunikation, PC World Sweden, PC/Aktiv, Windows World Sweden; **Switzerland:** Computerworld Schweiz, Macworld Schweiz, Pctip; **Taiwan:** Computerworld Taiwan, Macworld Taiwan, NEW VISION/Publish, PC World Taiwan, Windows World Taiwan; **Thailand:** Publish in Asia, Thai Computerworld; **Turkey:** Computerworld Türkiye, Macworld Türkiye, Network World Türkiye, PC World Türkiye; **Ukraine:** Computerworld Kiev, Multimedia World Ukraine, PC World Ukraine; **United Kingdom:** Acorn User UK, Amiga Action UK, Amiga Computing UK, Apple Talk UK, Computing, Macworld, Parents and Computers UK, PC Advisor, PC Home, PSX Pro, The WE8; **United States:** Cable in the Classroom, CIO Magazine, Computerworld, DOS World, Federal Computer Week, GamePro Magazine, InfoWorld, I-Way, Macworld, Network World, PC Games, PC World, Publish, Video Event, THE WE8 Magazine, and WebMaster; online webzines JavaWorld, NetscapeWorld, and SunWorld Online; **Uruguay:** InfoWorld Uruguay; **Venezuela:** Computerworld Venezuela, PC World Venezuela; and **Vietnam:** PC World Vietnam.

Editorial, Advertising and Business Offices: 492 Old Connecticut Path, PO Box 9208, Framingham, Massachusetts 01701-9208, (508) 872-0080. **Postal Information:** CIO (ISSN 0894-9301) is published semimonthly; monthly in July and August; and as a combined issue December 15/January 1 by CIO Communications Inc., 492 Old Connecticut Path, PO Box 9208, Framingham, Massachusetts 01701-9208. Periodicals postage paid at Framingham, MA, and at additional mailing offices. **Reprints:** Copyright 1996 by CIO Communications Inc. All rights reserved. Reproduction of material appearing in CIO is forbidden without written permission. Send all reprint requests to Permissions Department, CIO, 492 Old Connecticut Path, PO Box 9208, Framingham, Massachusetts 01701-9208. **Photocopy Rights:** Permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by CIO for users through the Copyright Clearance Center (CCC), provided that the base fee of \$3.00 per copy of the article, plus \$.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, Massachusetts 01970. Please specify: ISSN 0894-9301. Permission to photocopy does not extend to contributed articles followed by this symbol: †. **Subscriptions:** Address inquiries to CIO, 492 Old Connecticut Path, P.O. Box 9208, Framingham, Massachusetts 01701-9208. CIO is free to qualified information executives. To all others the one-year basic rate is \$98 for U.S. and Canada, \$110 for foreign countries (payable in U.S. funds only). The single copy price is \$8. Please allow 4 to 6 weeks for new subscriptions to begin. **Change of Address:** Please fax a copy of current subscription label along with new address to (508) 872-8506. Allow 4 to 6 weeks for change to take effect. **Postmaster:** Send change of address to CIO, P.O. Box 489, Northbrook, Illinois 60065-9816.

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G E N U I N E R E P R I N T S F R O M



ShopTalk

The Gap's Mick Connors on Streamlining the Global Supply Chain

CIO: How does The Gap source its apparel?

We buy merchandise from hundreds of suppliers all over the world. Our own sourcing group in Hong Kong has 300 to 400 agents who place and track our orders around the globe. We also use independent agents.

How do you communicate with your suppliers?

Our sourcing group is on our wide area network and can run applications off our mainframe. We link to our independent agents via value-added networks for transactions and e-mail. We conduct EDI transactions with our key suppliers using VANs, and we're testing EDI over the Internet now.

So The Gap functions not only as a global logistics company but also as a tightly integrated specialty retailer?

That's right. We're vertically integrated from the design of the product [in New York] through placing manufacturing orders [in Hong Kong] and replenishing our stores worldwide. We own the whole pipeline.

How does the pipeline work?

Two years ago, our merchan-



Spotlight On:

Dennis "Mick" Connors, senior vice president and CIO, The Gap Inc., San Bruno, Calif.

- **Line of Business** Specialty retailer
- **Bio** Spent 33 years in IT. Joined The Gap in 1990 as CIO. Earned a BA in business administration.
- **Day to Day** Directs IS support for four divisions (The Gap, Gap-Kids, Banana Republic and Old Navy) plus international. Manages a central IS organization with 480 employees worldwide. Administers IT budget of 1.4 percent of sales.
- **Challenges** Retooling IS; globalization; IT sourcing.

Express, then tested those systems with different manufacturers around the world, and finished implementing the initiative in two years.

Were there measurable business benefits?

You bet. Instead of spending millions of dollars on distribu-

tion centers, we could invest in other business initiatives.

What kind of computer resources does an effort like that require?

Because of all the applications we've developed and functions we've added in the past couple of years, we are growing our CPU consumption by 50 to 60 percent a year.

And what about inventory efficiencies?

Our goal is to get the right merchandise to the right store at the right time at the right price. Our biggest investment other than stores is

inventory. A lot of our system efficiencies have focused on how to streamline that process and eliminate the huge markdowns on the backside.

So you've mastered the art of global sourcing. What about sourcing IT?

In Europe we outsource our help desk. In the U.S., we outsource 80 percent of our application development, but we expect to reduce that by moving from the old waterfall development methodology to iterative development.

A year from now our application development will be 40 percent outsourced. Some new rapid application development tools have given us up to an 8-to-1 productivity gain. Meanwhile, the maintenance and enhancement work will be outsourced.

—John Whitmarsh



**WITH DESKTOP SYSTEMS THAT PUT OUT
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WEARING THE SAME OLD SUIT EVERYDAY.**



The next time there's a five-alarm fire at the office, sit back and relax. With the new PowerMate® Series from NEC, you can manage the entire network without leaving your desk.

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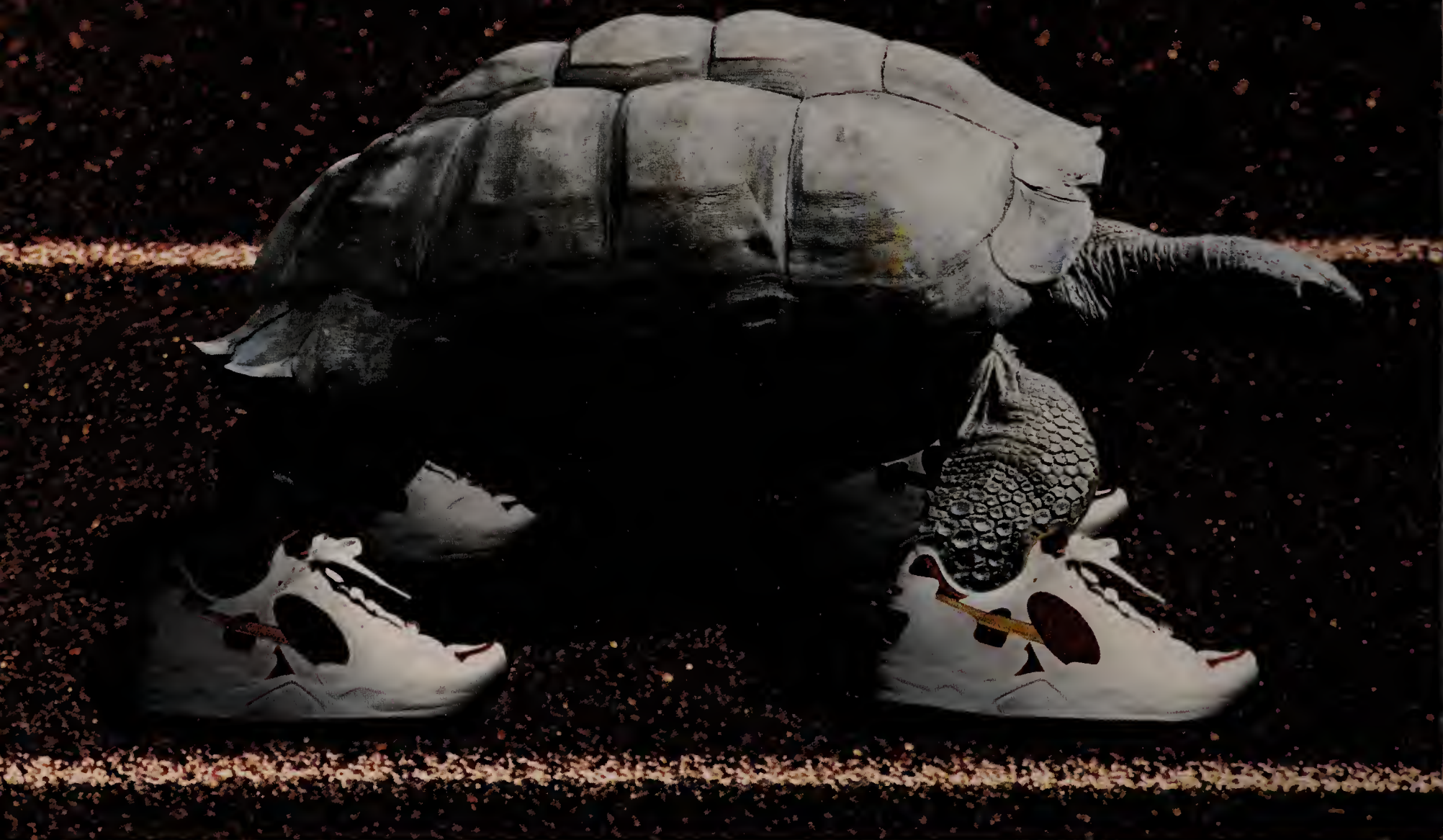
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This is no fable. The fact remains that routers are slow, somewhat antiquated devices that will bog down your network as long as they're at the center. Adding switches to the mix does little to improve overall throughput (just ask our sneakered friend). What you really need to do is deploy high-speed switches throughout the entire enterprise. But not just any switches...SmartSwitches from Cabletron.

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ease-of-use of the switch. The result: a fast, efficient network that maximizes productivity company-wide as it reduces day-to-day operational costs. Best of all, a virtualized switch-based network gives you world-class performance for the long run, start to finish.

Now's the time to come out of your shell and call Cabletron at (603) 337-0929 for a free "Make the Switch" kit.

